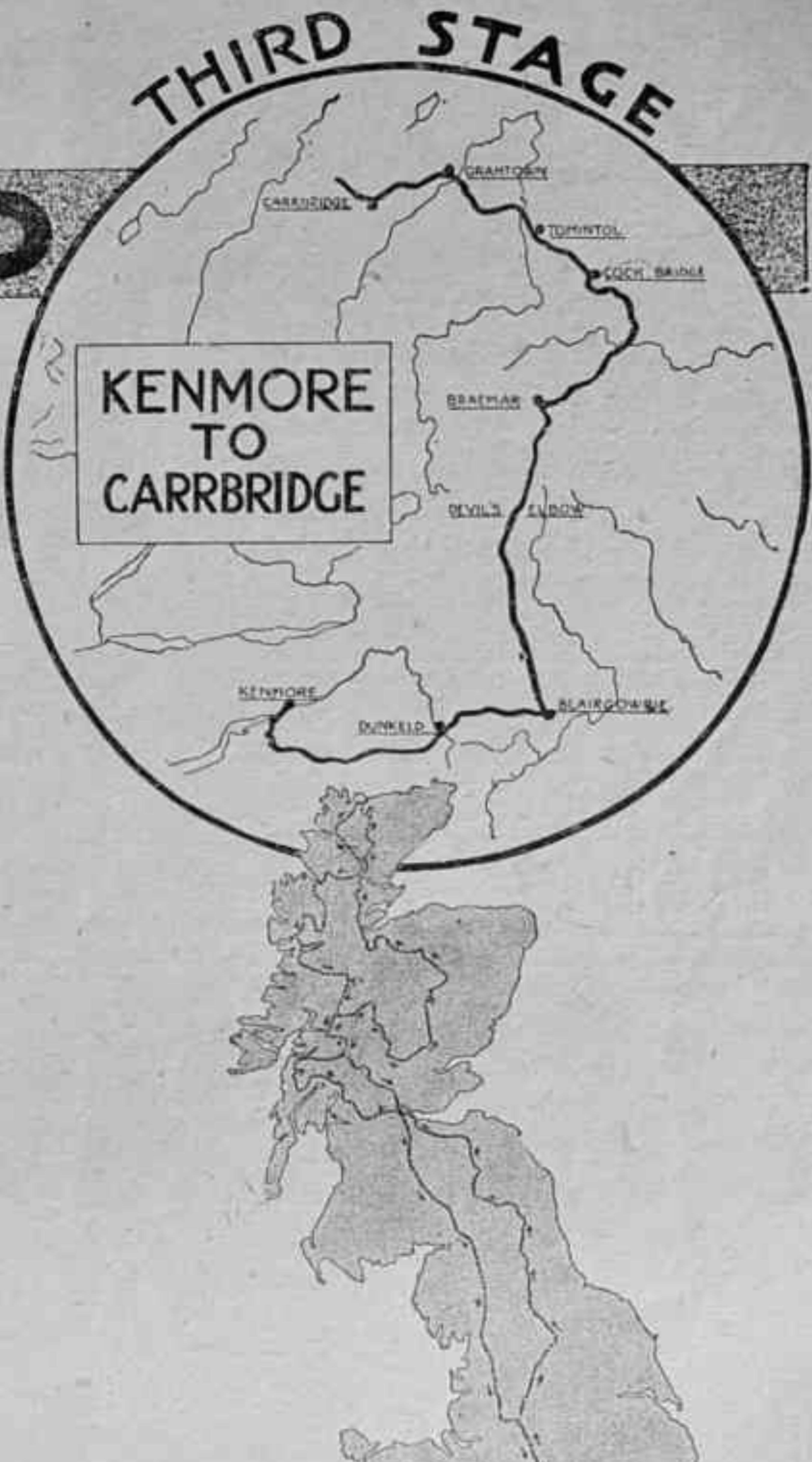
Advance Details of 1920 Models.

3D.

MOTOR CYCLING

No. 519. VOL. XX.
WEDNESDAY,
OCT. 22, 1919.
Registered at the G.P.O. as a Newspaper.

The CLYNO 1,800 Mile Trial



July 23. Carrbridge was our objective for this day. The Kenmore climb gave us no trouble, and one of our machines took all the "Hairpin" corners on the second gear. We were all successful, too, on the climb over the Spital of Glenshee. At The Devil's Elbow only one of us required to change to bottom gear.

Between Braemar, Tomintoul and Grantown we encountered one of the worst stretches of road in Scotland. The famous hill, Cockbridge Ladder, was in bad condition, the Scottish Trial riders having passed over the same course the previous day. It was really the first hill that made us think. The slimy surface was conducive to wheel-slip, but—we did it, and mighty well at that. Once round the second bend on low gear, we all climbed the rest on second.

For the remainder of the journey we had just to "fly." We were determined we would keep an average 20 miles an hour, and we did.

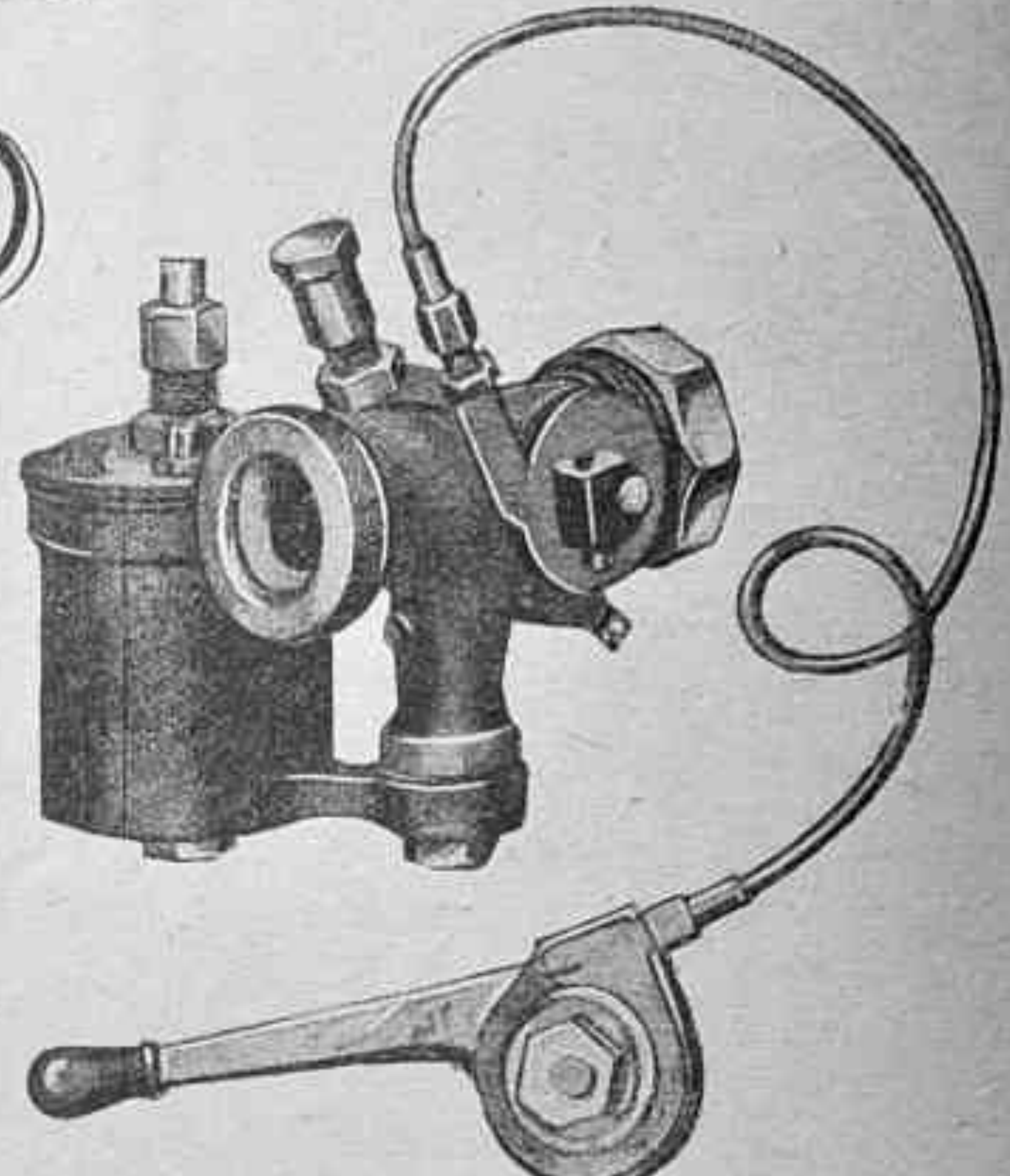
128 miles run and Carrbridge at last! Now for Durness and Lairg on the morrow, a trip we will describe in our advertisement in *Motor Cycling* of 29th October.



CLYNO ENGINEERING CO., LTD.,
Clyno Works, Wolverhampton.

The Capac

Single Lever Automatic Carburetter.



Fortunately, the urgent need for NATIONAL Petrol Economy is now a thing of the past, but the personal need is always present. CAPAC is a certain saver.

PRICE - - £4 : 4 : 0

Sizes, 1⅛" and ⅞"

"CAPACISM" No 9.

Why don't you tell your friend about CAPAC. Don't you like him now?

The Capac Co., Ltd.,
2, Woodstock Street, Oxford St.,
LONDON —— W. 1.



FULHAM, LONDON, S.W.,
September 20th, 1919.

Could you send me your catalogue of the very latest models, as I am anticipating purchasing a new machine shortly? The 2¾ h.p. "New Imperial" that I now have has given me excellent service, and has not given any trouble at all. It has been run every day, and has not failed me once.

2¾ h.p. Light Tourist, 2-speed - - -	58 Guineas
2¾ h.p. Light Tourist, 2-speed, with kick-starter - - -	65 Guineas.
8 h.p. Combination -	138 Guineas.

NEW IMPERIAL CYCLES, LTD., BIRMINGHAM.
(Est. 30 years.)

ADVERTISING THE TRUTH

The remarkable experience of a Bates' Tyre Cyclist was recounted in a recent advertisement. So unusual was the occurrence that many people felt inclined to accept it with the proverbial "pinch of salt." That an inner tube could bulge 10 to 12 inches and still withstand the strain seemed to border upon the impossible. This was a good performance even for a Bates Tube.

But we told the truth.

Plain, unadulterated fact is more convincing than exaggeration, however plausible. Moreover, we know that truth in advertising pays better in the long run than exaggeration.

Here is a letter from Sgt. R. A. Lucas, which not only substantiates the claims made in our last advertisement but proves that Bates Tubes are all that we represent them to be.

Bates SUPER RUBBER Inner TUBES

1st Sept. 1919.

To Messrs. W. & A. Bates Ltd.,

Gentlemen,—When I saw your advertisement about that wonderfully swollen inner tube on the sidecar, I was rather doubtful about it being possible for a tube to do such a thing, but yesterday, when passing Corfe Castle, with 3 up on my B.S.A. and sidecar the same thing happened to me, the outer cover somehow came away from the rim and the tube expanded to a terrible size. Both my passengers said "look," and I looked. It was really marvellous but, unfortunately, before I could stop, the tube caught the mudguard, which tore it, but I am confident that had I been able to stop in time the tube would not have burst in spite of its alarmingly inflated size.

I enclose the tube for your inspection. Yours faithfully,

R. A. LUCAS (Sgt.)

Embarkation Depot, Southampton

W. & A. BATES, LTD., St. Mary's Mills, LEICESTER

Depots in London, Manchester, Glasgow, Newcastle-on-Tyne, Belfast and Bristol.

COLONIAL WHOLESALE STOCKHOLDERS:

AUSTRALIA: A. G. Healing & Co., Ltd., 554, Post Office Place West, Melbourne; Bennett & Barkell, Ltd., Meagher and Clippen Streets, Chippendale, Sydney; Cornell Ltd., 122, Pirie Street, and 29, Hyde Street, Adelaide, S.A. **BRITISH EAST AFRICA**: Childs, Parr & Joseph, Nairobi. **BURMA**: Watson & Son, 39, Phayre Street, Rangoon. **F.M.S. & S.S.**: A. C. Davis, Penang. **INDIA**: Shippers & Co., Ltd., 9-1, Clive Street, Calcutta; 10, Elphinstone Circle, Bombay, and at Cawnpore. **NEW ZEALAND**: Cycle and Motor Supplies, Ltd., Featherstone and Johnston Streets, Wellington; 140, Lichfield Street, Christchurch. **SOUTH AFRICA**: H. E. A. Smith, 34, Von Brandis Street, Johannesburg.





The "Precision" "Big" Twins

Three New Models.

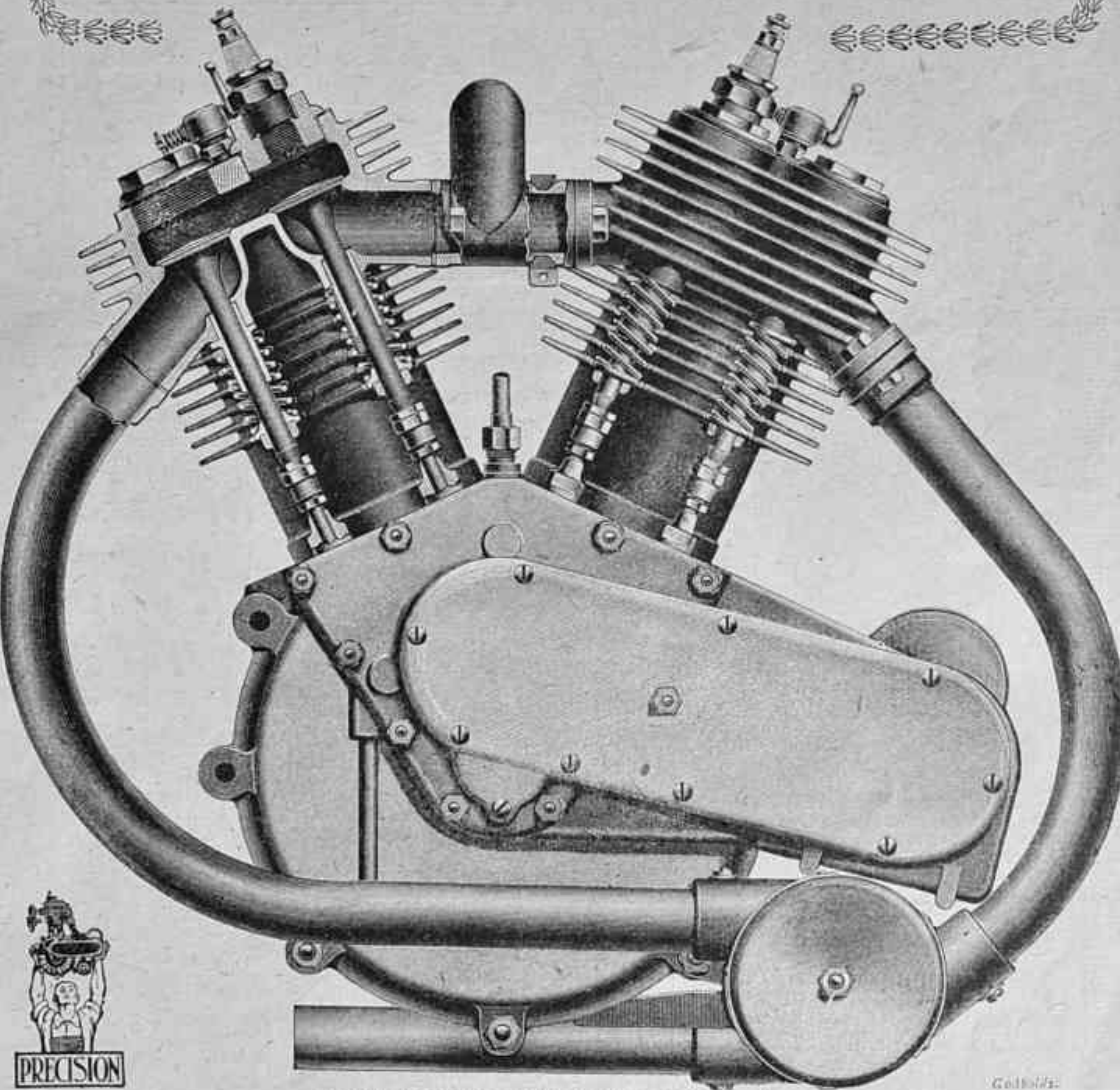
Air Cooled:
8 h.p. 85 x 85 (964 c.c.)
10 h.p. 85 x 96 (1090 c.c.)

Water Cooled:
10 h.p. 85 x 96 (1090 c.c.)

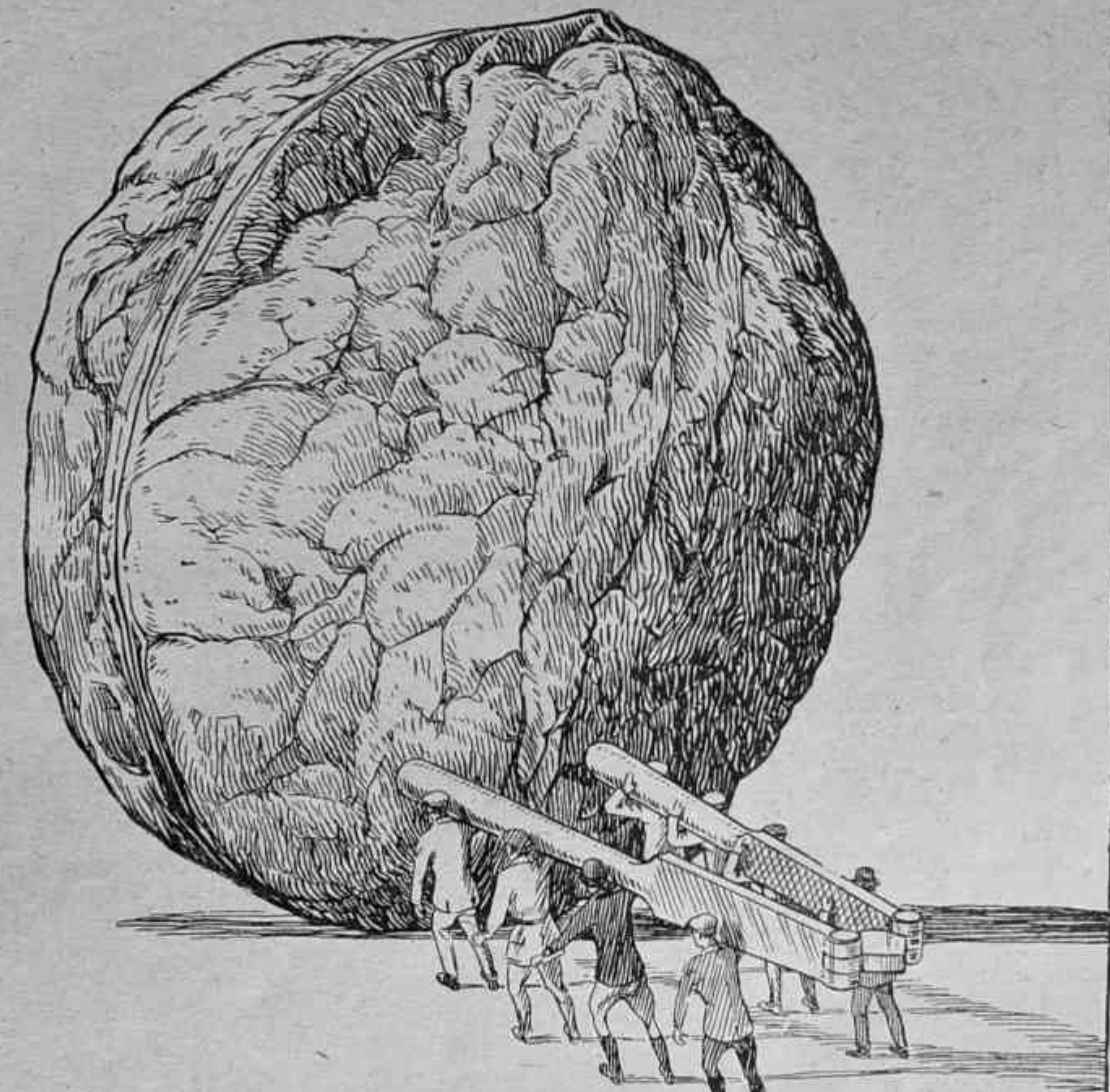
"PRODUCED as they are by a firm of the widest experience, they impress us as being of sound common-sense design, and of such construction that there is every promise of great satisfaction on the part of the user. We understand that shortly several Precision-engined 'big-twin' cyclecars and motorcycles will be offered to the public." —*The Motor Cycle.*

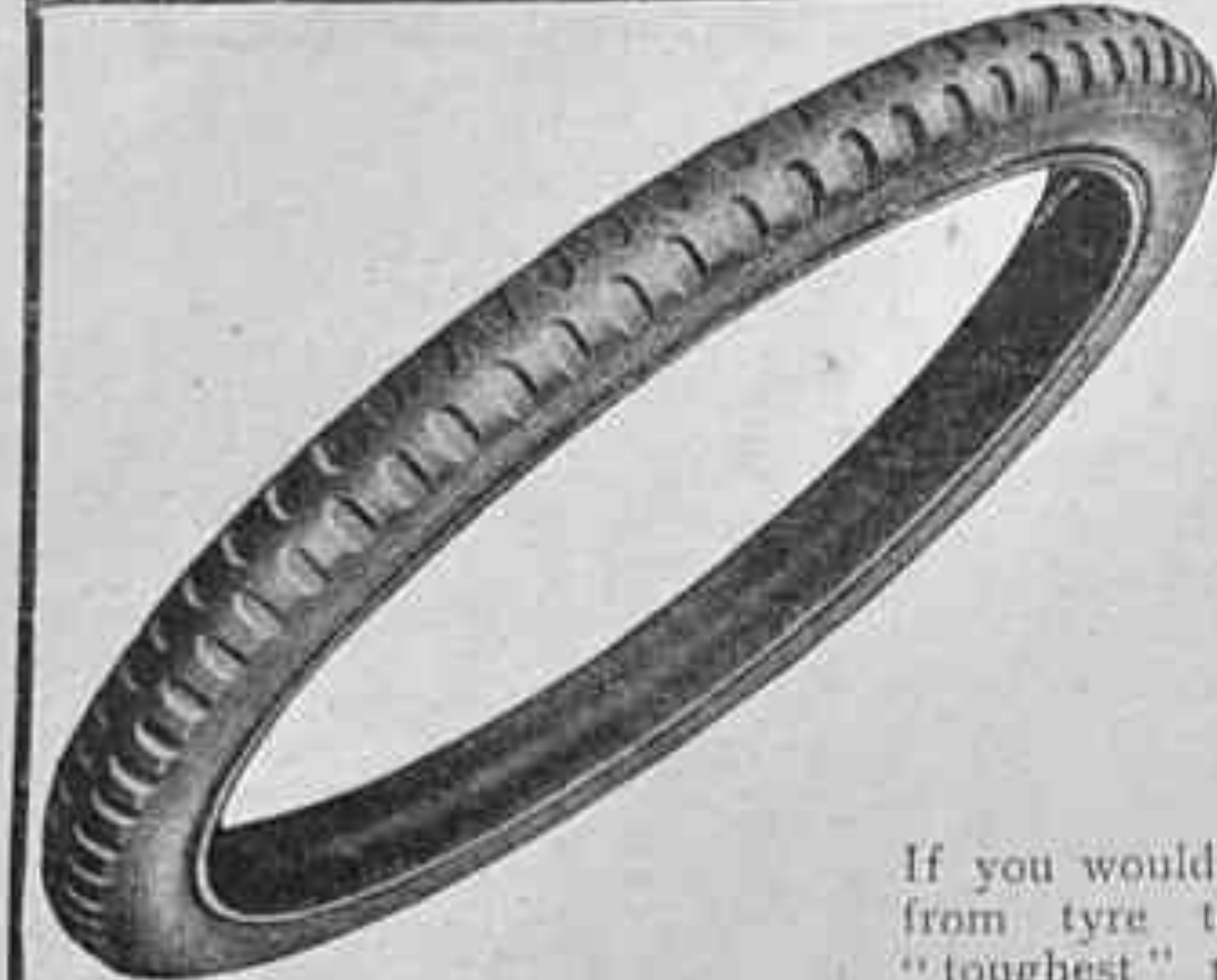
"The Same as You can Buy."

F. E. Baker, Ltd., The Precision Works, King's Norton, Birmingham.



PRECISION





Wood-Milne

Keygrip

MOTORCYCLE TYRES

If you would know what it is to be absolutely free from tyre trouble, to be able to negotiate the "toughest" piece of road without wondering "what is going to happen next"—or finding out, then fit the new Wood-Milne "Keygrip" Tyre.

These tyres are made on the most generous lines, and the very heavy tread gives a degree of comfort hitherto unknown.

With "Keygrips" on, it is good-bye to aches from jarred wrists and back.

Write for our Latest List.

WOOD-MILNE, LTD. & GEORGE SPENCER, MOULTON & CO., LTD.

42-46, Wigmore Street, W.1.
Wires: "Wudmiln, Wesdo, London," also "Spenmoul, Wesdo, London."
Telephone: Mayfair 6789 and 6790.

MANCHESTER—21, Albion St., Gaythorn; BIRMINGHAM—204, Corporation Street; BELFAST—12, Donegal Square West; BRISTOL—141, Victoria St.; DUBLIN—69, Middle Abbey Street; GLASGOW—10, Waterloo Street; LEEDS—68, Albion Street; NEWCASTLE-ON-TYNE—Haymarket Lane; LIVERPOOL—31 & 33, Leece St.

Lessons of the 6-Days' Trial

WEIGHT.

All the competing machines were weighed and the weights published.

The four 5 h.p. ZENITHS in the Solo Class showed an average weight of 303 lbs., which is less than the majority of the $3\frac{1}{2}$ and 4 h.p. (the "big single") machines. The lightest 5 h.p. ZENITH, 284 lbs., was 16 lbs. less than one 3 h.p. machine, and but 32 lbs. more than two $2\frac{3}{4}$ h.p. machines.

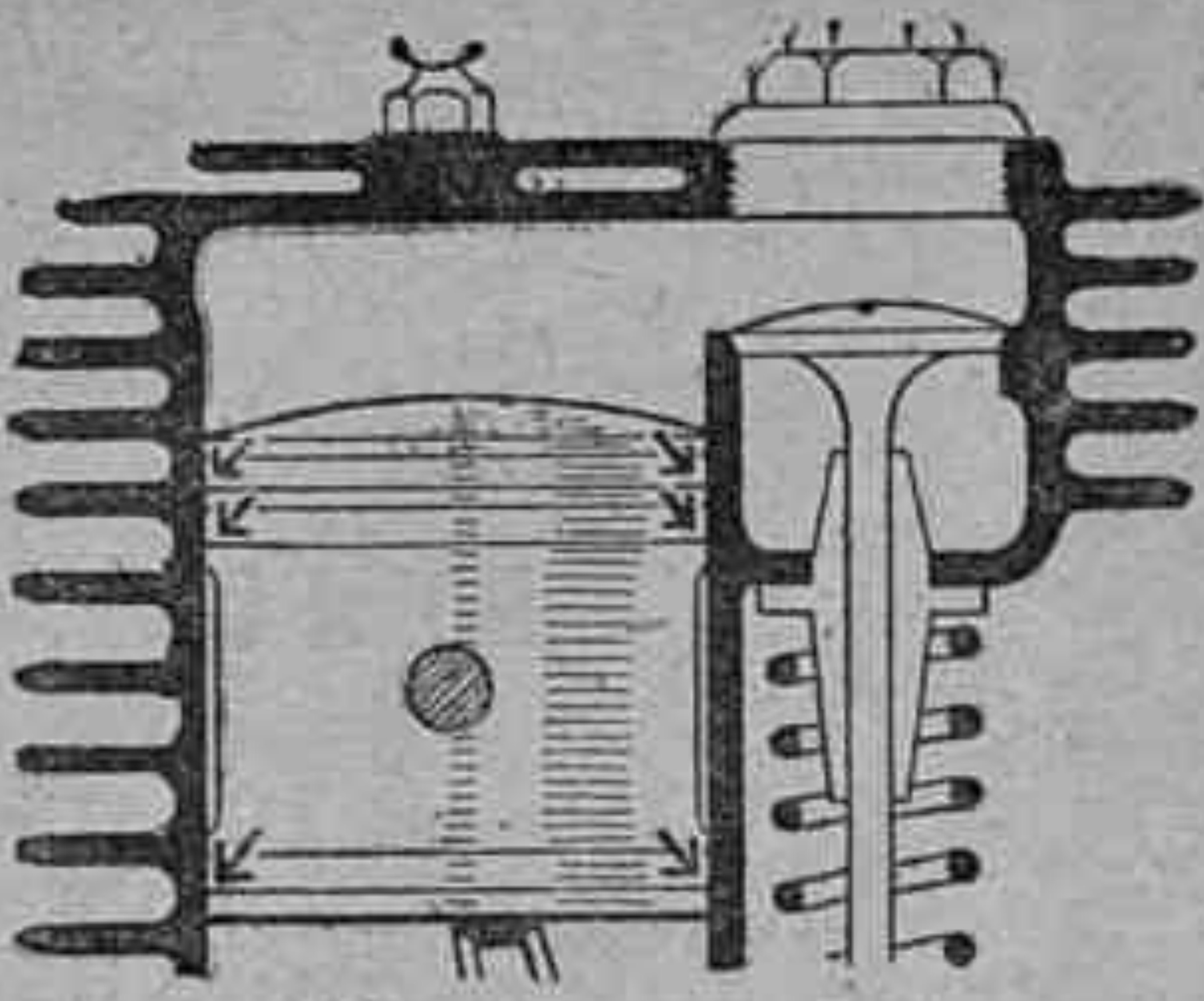
No wonder "The Motor Cycle" says: "There can be scarcely any doubt that the list of weights published . . . . . . caused some surprise."

Consider what this means. As the owner of a ZENITH you have more power, the smoother running of a twin engine, less weight for the engine to propel, and, consequently, less expense for fuel and tyres. Also, better acceleration and deceleration (when braking), and less dead weight to move about yourself. And that's quite apart from the advantages afforded by the GRADUA GEAR—the ideal method of gear ratio control. . . . . Think it over.

ZENITH

MOTORS, LTD.

HAMPTON COURT :: ENGLAND.



Sealing in the Power

Drip! Drip! Drip! If accident puts a leak in your petrol tank, you quickly notice it. The evidence is plain.

But there is another much more serious, and far more common form of leakage. That is leakage of the fuel charge past the piston rings.

No. You can't see it. Nor is there usually any tell-tale sound. Everything seems the same as usual. But gas is leaking—leaking steadily.

How? Between piston, piston rings and cylinder wall is a small clearance. When you use the correct oil in your engine this clearance is sealed. The oil closes it up, effectively retaining the fuel charge above the piston.

But suppose the body of the oil is incorrect. What happens? Only a partial oil seal results. On compression, part of the fuel charge escapes down past the piston rings. On the power stroke, part of the explosion escapes by the same path.

True, the leakage per stroke is small. But multiplied by over 7,000 piston strokes per mile in the average motor cycle, and the total leakage is clearly a factor to be reckoned with. It tells plainly in petrol consumption per mile. Gargoyle Mobiloils used as specified in the partial chart here published often cut previous fuel consumption figures from 10 per cent. to 20 per cent. Almost invariably the oil consumption also drops immediately.

VACUUM OIL COMPANY, LIMITED,
CAXTON HOUSE, WESTMINSTER, S.W. 1.
Telegrams "Vacuum, 'Phone, London."
Telephone Victoria 6620 (6 lines)

Chart of Recommendations for

Motor Cycles.

Explanation.—In the Chart below, the letter opposite the make indicates the grade of Gargoyle Mobiloils that should be used. For example, "A" means Gargoyle Mobiloil "A"; "Arc" means Gargoyle Mobiloil "Arctic," &c.

MODEL OF	1919		1917-18		1916	
MAKE OF MOTOR CYCLE.	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER
A.B.C.	A	A	—	—	A	A
A.J.S.	BB	BB	—	—	BB	BB
Allon	TT	TT	—	—	TT	TT
Ariel 3½-h.p.	BB	BB	—	—	BB	BB
" 5-6 h.p.	A	A	—	—	—	—
Auto-wheels	TT	TT	—	—	TT	TT
Bradbury	BB	BB	—	—	BB	BB
Brough	BB	BB	—	—	BB	BB
B.S.A.	TT	TT	—	—	BB	BB
Calcott	—	—	—	—	TT	TT
Calthorpe	BB	BB	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
Campion (J.A.P.)	BB	BB	—	—	BB	BB
" (other models)	TT	TT	—	—	TT	TT
Carfield 2-stroke	TT	TT	—	—	-	-
Chater-Lea	BB	BB	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
Clyno	BB	BB	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
Connaught	TT	TT	—	—	TT	TT
Coventry Eagle (Villiers)	TT	TT	—	—	TT	TT
" (other models)	BB	BB	—	—	BB	BB
Diamond (Villiers)	TT	TT	—	—	TT	TT
" (other models)	BB	BB	—	—	BB	BB
Dene	TT	TT	—	—	TT	TT
De Luxe	TT	TT	—	—	TT	TT
Dot	BB	BB	—	—	BB	BB
Douglas	BB	A	—	—	BB	A
Elswick	TT	TT	—	—	TT	TT
Enfield (J.A.P.)	BB	BB	—	—	BB	BB
" (other models)	TT	TT	—	—	TT	TT
Excelsior 2-stroke	TT	TT	—	—	TT	TT
" (other models)	BB	BB	—	—	BB	BB
Harley Davidson	B	A	B	A	B	A
Henderson	A	A	A	A	A	A
Hobart (J.A.P.)	BB	BB	—	—	BB	BB
" (Villiers)	TT	TT	—	—	TT	TT
Humber	TT	TT	—	—	TT	TT
Indian	—		B	A	B	A
Ivy	—		—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
James	BB	BB	—	—	BB	BB
" 2-stroke	BB	BB	—	—	TT	TT
Lea-Francis	BB	BB	—	—	BB	BB
Levis	TT	TT	—	—	TT	TT
L.M.C.	BB	TT	—	—	BB	TT
Matchless	TT	TT	—	—	BB	BB
Mead (J.A.P.)	BB	BB	—	—	BB	BB
" (Precision)	TT	TT	—	—	TT	TT
Metro Tyler	TT	TT	—	—	—	—
New Hudson	TT	TT	—	—	TT	TT
New Imperial	BB	BB	—	—	BB	BB
Norton	TT	TT	—	—	BB	BB
N.U.T.	TT	TT	—	—	TT	TT
O.K. Junior	TT	TT	—	—	TT	TT
P. & M.	BB	BB	—	—	BB	BB
Pope	B	A	B	A	B	A
Rex	BB	BB	—	—	TT	TT
Rover	BB	BB	—	—	BB	TT
Royal Ruby	BB	BB	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
Rudge	BB	BB	—	—	B	TT
Scott	TT	TT	—	—	TT	TT
Singer	TT	TT	—	—	TT	TT
Sunbeam	TT	TT	—	—	BB	BB
Sun (J.A.P.)	—	—	—	—	BB	BB
" (other models)	—	—	—	—	TT	TT
Triumph	BB	BB	—	—	TT	TT
Vitesse	TT	TT	—	—	—	—
Williamson (water-cooled)	—	—	—	—	A	A
Wolf (J.A.P.)	—	—	—	—	BB	BB
Wooler	TT	TT	—	—	TT	TT
Zenith	BB	BB	—	—	BB	BB

Gargoyle Mobiloils are sold by dealers everywhere

GARGOYLE

Mobiloils

A grade for each type of motor

Motor Cycle Aids

FOR THE ENGINE.

COOLIE MOTOR CYCLE OIL

cheapest when mileage and quality of service are taken into account. The real oil arguments are gravity and viscosity and these are only associated with high grade oils and in none to a greater extent than in "Coolie." Used by many of the leading competition riders with the best results.

In quart; ½ Gallon and Gallon Tins, 5 and 10 Gallon Drums.

FOR THE SIDECAR

"CHEMICO" CAR POLISH. Unequalled for imparting a brilliant lustre to the coachwork of cars, side-cars, etc. Removes all stains, grease, smears and dullness. Gives a hard surface which only needs an occasional rub.

Used by car owners everywhere.

FOR THE TYRES

"CHEMICO" TYRE STOPPING AND TYRE PAINT. Tyre Stopping effectively stops cuts, and gashes in covers by filling them with a plastic rubber preparation.

TYRE PAINT or rubber paint seals all those tiny pin holes and saves the tyre from premature ruin.

FOR THE LAMP

"CHEMICO" CARBIDE. You cannot afford to play tricks with the lamp. When you buy carbide make sure of your light by purchasing only "Chemico" carbide, which, being "all" carbide, no dust, no waste, and which, being "perfectly" coated and packed, can always be depended upon.

THE
County Chemical Co., Ltd.
Chemico Works, BIRMINGHAM.

G.N

COMFORT, SPEED AND ECONOMY.

The G.N. is comfortably sprung on flexible semi-cantilever springs. The seating position is comfortable, the steering and pedals are light to the touch, the latter being adjustable for reach. The special hood and adjustable screen give ample protection in all weathers. As to performance, speed and hill-climbing, the list of the season's successes, recently published will testify.

The Standard TOURING G.N.
With detachable interchangeable wheels, but not equipped with accessories, approximately - £140

Fully equipped with hood, screen, dynamo lighting set with head lamp, side and tail lamps, spare detachable wheel with tyre, horn, pump, tool kit, jack, and number plates, approximately - £167 10

**G.N. Ltd., ETNA WORKS,
ALBERT ROAD,
HENDON,
N.W.
4.**

Raymond

The Bradbury

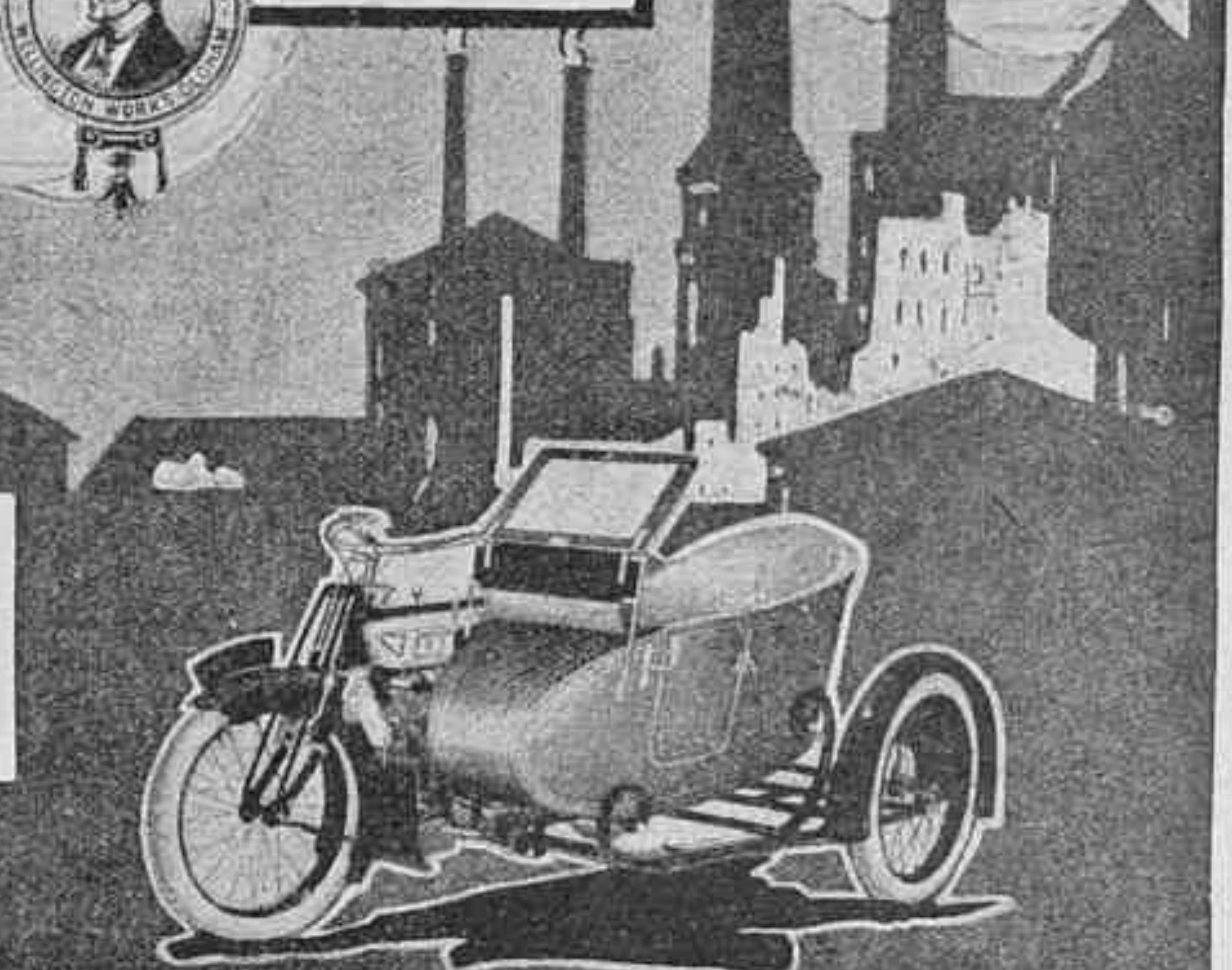
A RIDER'S OPINION OF THE BRADBURY

"I have pleasure in writing you to tell you that I am the fortunate owner of one of your Motorcycles, 4 h.p. I have had it since 1914 and it has not given me any trouble at all, and above all I have yet to come across the hill that I cannot climb with sidecar attached with the greatest of ease. I wish for nothing finer than my present mount. I also state it takes me and wife and four children *anywhere*, and have got every confidence in it wherever I like, or any distance I like to go. I cannot speak too well of it as it has behaved grand. I have to travel very hilly districts round Leicester, Lincolnshire, Derbyshire, Warwickshire and Worcestershire."

So writes Mr. W. HOLTON, of 45, Wilberforce Road, Leicester.

The same absence of all trouble and worry so necessary for enjoying to the full the glories and pleasures of Motorcycle riding are yours also if your motorcycle is a BRADBURY.

BRADBURY & CO., LTD., OLDHAM.



1919 MODELS.

- 4 h.p. FIXED ENGINE BELT DRIVE.
- 4 h.p. 2-SPEED BELT DRIVE.
- 4 h.p. SINGLE 3-SPEED CHAIN DRIVE.
- 6 h.p. TWIN 3-SPEED CHAIN DRIVE.


SPHINX
4/- EACH.
The UBIQUITY
of Sphinx Plugs is unmistakable testimony of their merit. They are the most popular British Plugs for Cars and Motorcycles, Farm Tractors and Commercial Vehicles; Marine, Oil and Gas Engines. Whatever the purpose, whatever the place, be it Britain or Brazil, India or Iceland, there will Sphinx Plugs be found, functioning unfailingly and earning unqualified approval.
¶ Thoroughly British, and worthily upholding the traditions of British manufacture, Sphinx Plugs are sturdy in construction, made of materials of the highest quality, designed to meet the multifarious and exacting requirements of present-day engines, efficient in use and moderate in cost.
¶ The various types of Sphinx Plugs are described in the fully illustrated catalogue, a copy of which will be posted free upon request.
The Sphinx Mfg. Co.
Birmingham.
PLUGS

Olympia 1919

A Little goes
a Long way.

PRATT'S
"PERFECTION" SPIRIT
the Fuel of Progress.



in the green can.

AVAILABLE EVERYWHERE



BY APPOINTMENT
Anglo American Oil Co., Ltd.
36 Queen Anne's Gate
London, S.W.1.

A·J·S

successes at The
CORK & DISTRICT
Hill Climb, 1st Oct.

PIKE CUP
for Fastest Time and Best Handicap Performance

also

BEST PERFORMANCE
on Formula in Class 3 Solo Machines, 350-600 c.c.

The winner of both these awards, Mr. G. S. Hosford, rode a 1915 4 h.p. A.J.S. machine, which, in the words of the "Irish Cyclist," "has been pulling its owner's 16 stone round the country since early 1915, often with the additional load of a sidecar, which makes its excellent performance all the more meritorious."

This is yet another striking proof of A.J.S. reliability and consistent service, and typical of the success attending riders of A.J.S. machines.

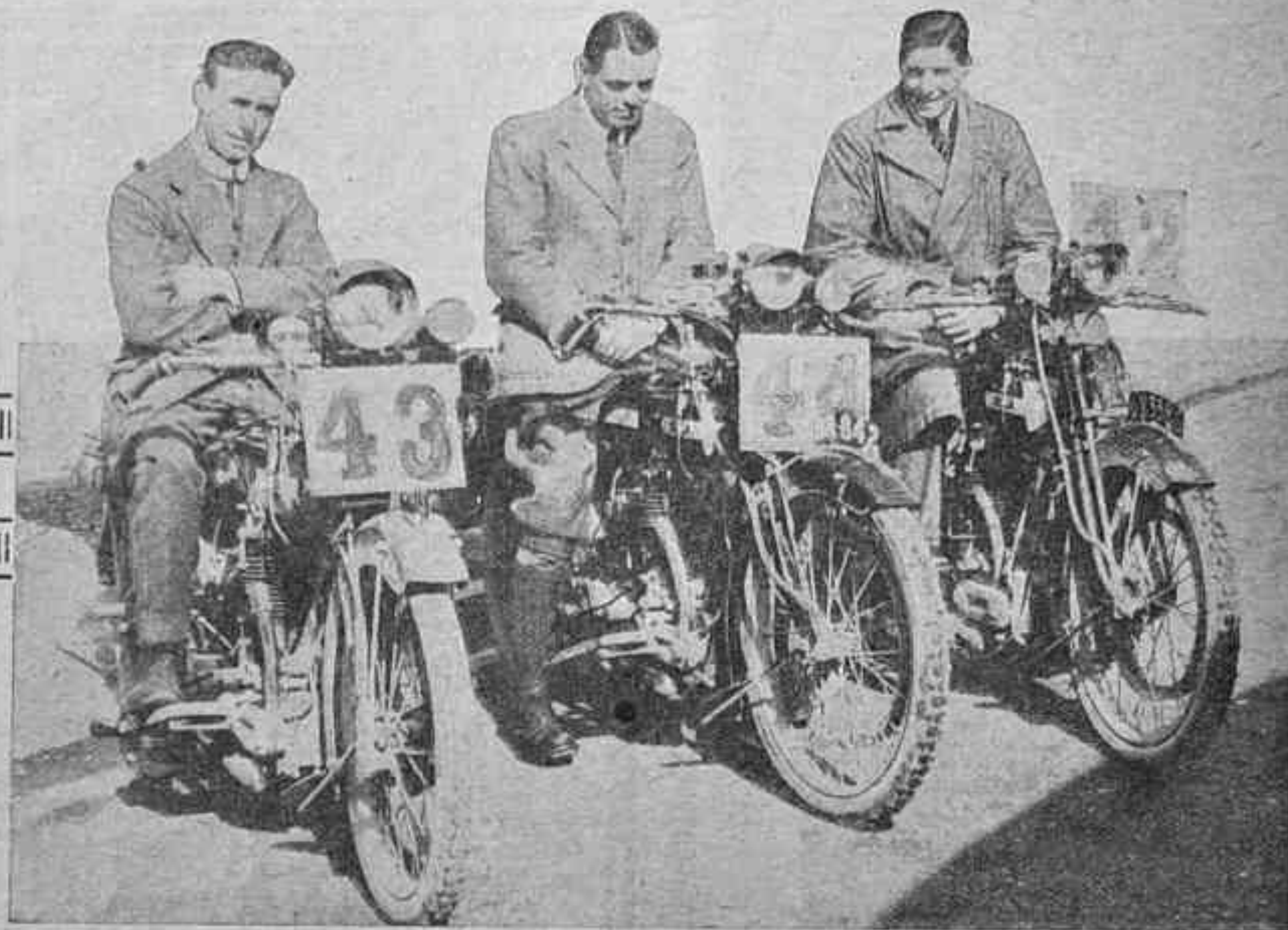
Let it be YOUR choice also——select an A.J.S.

PRICES: 6 h.p. A.J.S. Combination, with Spare Wheel & Tyre, Windscreen, Stormproof Apron and Tools ... £150
Motorcycle only ... £115 5s.

Write for particulars and catalogue to

A. J. STEVENS & CO. (1914), Ld.,
Graiseley House, WOLVERHAMPTON.

London Agents:
H. Taylor & Co., Ltd., Store St., Tott. Ct. Rd., W.C.1.



The A.C.U. Six Days' Reliability Trials.

B.S.A. WON THE TEAM PRIZE

also

Three Gold Medals.
(H.F. Edwards, F. W. Applebee, F. Turvey)

Two Silver Medals.
(W. J. Chambers, L. L. Sealey)

One Bronze Medal.
(A. E. Wood)

The B.S.A. Team (H. F. Edwards, L. L. Sealey, and F. Turvey) obtained 557 marks out of a possible 600, and covered the exhaustive and difficult course in splendid style. The excellent conditions of the machines at the finish, proves conclusively, the sound construction and reliability of B.S.A. Motor Bicycles.

F. Turvey and H. F. Edwards gained 191 out of 200, the HIGHEST TOTAL made by any rider in the trial.

THE BIRMINGHAM SMALL ARMS Co., Ld., BIRMINGHAM



IS ROAD TESTING NECESSARY?

No Serious Troubles are Likely to be Noticed in a Short Test.

TO the enthusiastic motorcyclist there is nothing more interesting than an encounter with testers out on the road with new machines. Living in the heart of the Midlands, and having perforce to be out on the roads each day, I have many opportunities of seeing them at work, and I have spent many an idle half-hour at Stoneleigh Hill, where the Coventry testers on Triumph, Rover, Humber, and Rudge machines are often to be seen, and at Rose Hill and Wetheroak Hill, near Birmingham, where are sometimes to be met James testers from the Metropolis of the Midlands, or B.S.A. men from the needle-making town of Redditch.

Yet, in spite of all my admiration for their riding skill, I have often wondered whether this road-testing game is worth while. It is obviously a rather expensive process, and I am doubtful whether the expense incurred, which has of course to be borne by the purchaser in the long run, is justified by the results obtained. Extensive road tests of new models are, of course, an absolute necessity, since only actual road conditions can prove whether or not a new design is satisfactory, but when once a design has been approved as roadworthy and put into production it would seem that all the testing necessary could be carried out inside the works.

Consider the engine in the first place. What useful purpose does a road test of some 15 miles serve? It certainly does not show whether or not there are any weaknesses in the engine, for it takes the last lap of a Six Days' Trial to show that. Neither is the engine sufficiently run in to allow the tester to make those last adjustments which mean so much to the tune of an engine when it has done a few weeks' work. Even the power cannot properly be tested on a short run in the Midlands if the engine is anything but the smallest of lightweight units. Moreover, we are always told that a new engine should be treated very gently for the first 500 miles at least, and purchasers are bidden to fight down any temptation to try "full throttle" until this distance has been covered. Yet I see new machines out on test, travelling all out within a mile of the factory.

Road testing certainly does not prove the gearbox, for it is never used except for starting from rest, and in any case the loads imposed upon it by a short solo run are no criterion of its ability to stand up to heavy sidecar work. Frames will certainly not fall to pieces in the first hour's run, and a youth could test spring forks on a testing machine far more rapidly than they can be dealt with on the road.

Writing as a rider, it seems to me that it would be far more satisfactory to deal with the whole job inside the works than to go to the expense of sending every machine out on the road under conditions which must at the best make adequate supervision very difficult.

I would suggest that engines should be run in on the bench for three or four hours under a light load, so that all their wearing parts are properly eased down, and any danger of seizure avoided. The gearbox could be dealt with in a similar manner, and the operator in charge could see that the gear change mechanism worked correctly, and that there was no undue overheating of the gearbox when the lower gears were engaged. Half-an-hour's run on each gear should be ample. Fork springs and similar items can be dealt with rapidly on testing machines, and finally the assembled machines could be thoroughly checked over for final adjustments by a highly-skilled inspector who could see that exhaust valve lifters were properly adjusted, that carburetter controls were working smoothly, that brakes were not rubbing in the "off" position, and other similar items now dealt with by the road tester. Such a system would certainly be cheaper, and at the very least as satisfactory as the present road test method. "ROADBURNER."

INDIAN PROGRAMME FOR 1920.

Two Models—7.9 and 4 h.p. Dynamo Lighting on the Big Twin. Gear Primary Drive on the 4 h.p.

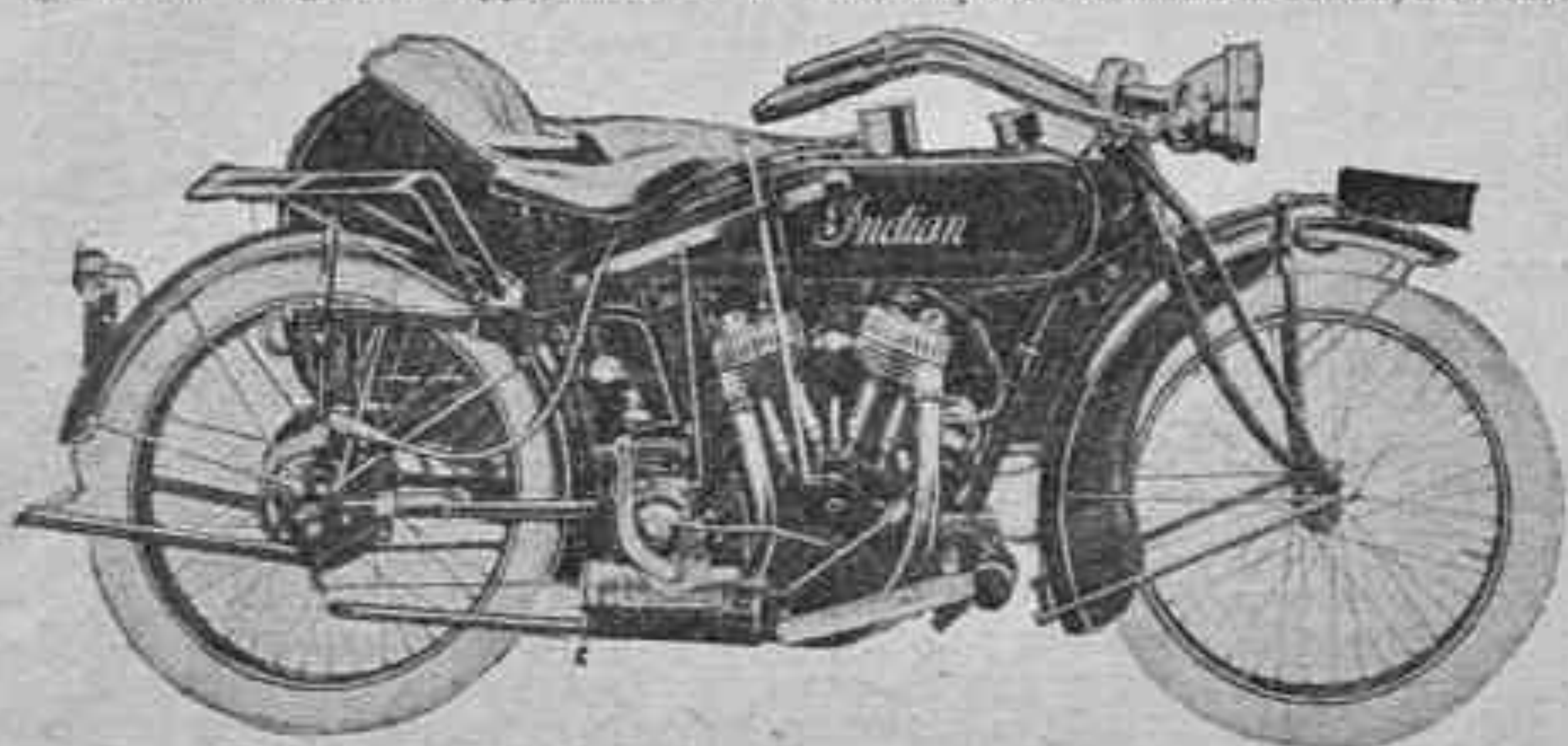
THE announcement that the 1920 model Indians are on the way is one of the first tangible results, from the motor-cycling standpoint, of the abolition of the restriction on imports, and we are able to give this week a full description of both the machines that will be marketed during the ensuing season. For some time past it has been pretty generally known that experiments were being conducted in America in connection with a medium-powered twin, which now makes its bow to the public under the name of the Indian Scout, of which more anon.



The drive side of the 4 h.p. motor.

Powerplus Model Remains Virtually Unaltered.

In the case of the big twin, this does not differ in general appearance to a great extent from previous models which are so well known on the English market; in fact, anyone whose idea of progress is represented by radical alteration would be disappointed. The fact is, that in the Indian we have a good basic design which has only required minor alteration for some years, and to our mind this is one of the strongest recommendations it is possible for a machine to possess.



Right-hand view of the electrically-equipped Powerplus.

The engine is of 79.3 by 100.8 mm. bore and stroke, giving a capacity of 997.6 c.c., fitted with side valves and roller bearing connecting rods and main shaft. By the adoption of larger valves it has been found possible to obtain still greater power and flexibility, together with cooler running. The Indian Schebler carburetter, which has been used for several seasons past, is retained, but in a slightly larger form.

Ignition and Lighting.

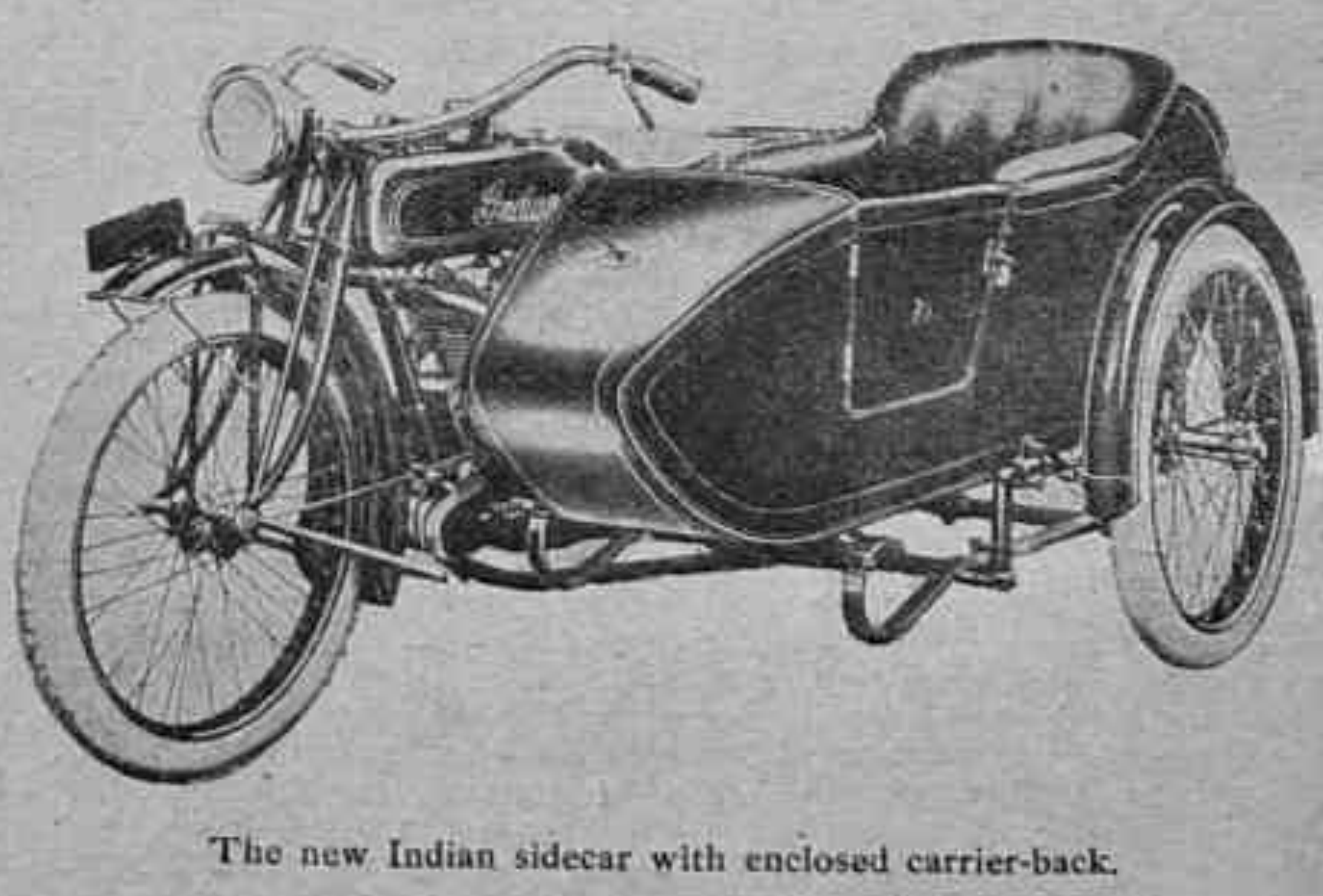
Ignition is by means of a Splitdorf enclosed waterproof magneto, which incorporates for motorcycle service those details which have been developed in aviation and vehicle ignition during the war, a separate Splitdorf generator supplying the lighting current, which is driven by a spring wire belt. This generator is of the direct current type, and is quite automatic in action, a feature being the inclusion of an ammeter in the circuit, which shows the current going to the battery, as well as acting as an indicator of the condition of the entire electrical system. In view of the tendency of late on the part of manufacturers to adopt a combined ignition and lighting generator, the decision of the Hendee engineers in favour of the two-unit system is interesting.

Other Powerplus Details.

Needless to say, the mechanical oil pump which has so long been a feature of the Indian motorcycle, is retained, and is supplemented by a hand pump to be used in case of emergency. The oil tank holds 2¼ quarts, the capacity of the petrol tank being no less than three gallons.

The transmission on the big twin is by chain throughout, Renold chains protected by guards being employed. The three-speed gearbox, with ratios of 4.75, 7.12, and 11.87 to 1, is similar to that used previously, working in conjunction with the well-known and appreciated Indian clutch, with which it is interconnected, making gear changing without declutching an impossibility, thus preventing damage. The kick-starter is on the right-hand side, quadrant and pinion running in oil.

The Indian, with its cradle spring frame and fork, is one of the most



The new Indian sidecar with enclosed carrier-back.



Three-quarter view Indian Scout triple stem front forks, showing leaf spring and ample mudguards.

comfortable machines to ride in existence; the rear suspension is now in its seventh year, and the fact that little or no alteration has been made in this or the spring fork is proof of the excellent results obtained. A slight modification in the design of the bell crank levers in the spring fork has been carried out, providing greater strength and increased bearing surface. In connection with this subject, it is interesting to note that the handlebars are provided with a double anchorage, obviating any possibility of twisting even under the most severe strains.

The Brakes.

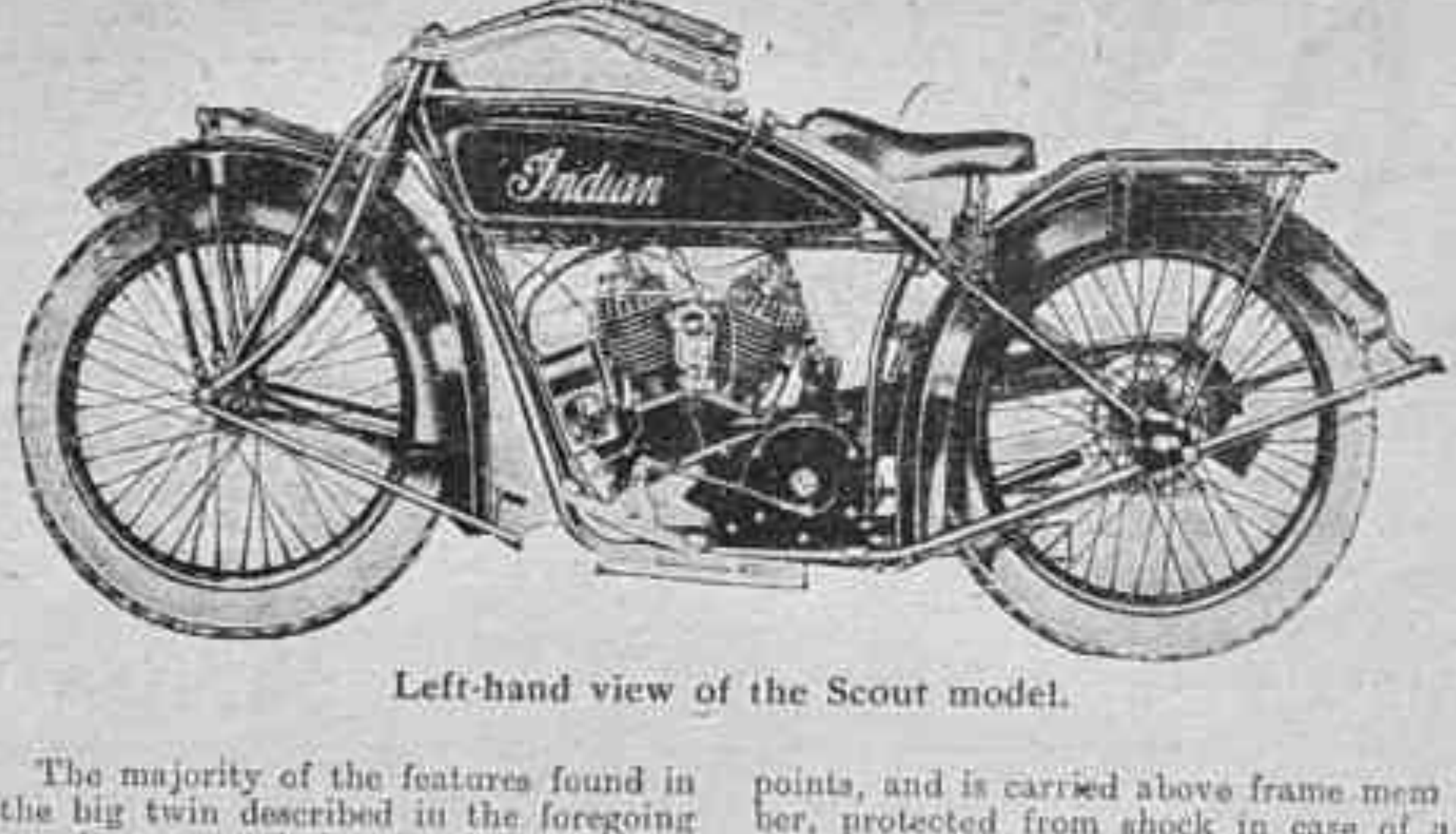
The Indian brakes are quite up to the standard set by American machines generally, which is saying a good deal. The Hendee concern fit two brakes operating on the back wheel, one, internal expanding, applied by pedal, the other, external contracting, operated by hand lever. The throttle and spark control is carried out by means of twist-grips, a rocking pedal on the left-hand side of the machine actuating the clutch.

Twenty-eight by 3 in. tyres are fitted, as well as knockout spindles to the hubs, two innovations from across the water which motorcyclists are beginning to demand on home-produced mounts. Front and rear stands complete the specification.

The majority of the features found in the big twin described in the foregoing are incorporated in the Scout model, which is a medium-weight rigid-frame machine fitted with an engine of 70 mm. by 78 mm. bore and stroke giving 596 c.c. capacity. The nominal rating of this engine is 4 h.p., but under test with a dynamometer it has actually developed 11 h.p. Like its big brother it has roller bearings to the connecting rods and main shafts, Indian Schebler carburetter, mechanical lubrication, and Splitdorf magneto, but no dynamo lighting system, or rear springing.

Unit Construction.

The feature of this model undoubtedly lies in the unit construction of the engine and gearbox, which incorporates the primary drive, carried out by means of spiral gears of wide face and great strength running in oil. The abolition of the high-speed engine chain, which is the one which almost invariably causes what little trouble is experienced with chain drive, undoubtedly represents distinct progress in design, and we should not be at all surprised to see this method, or an alternative one with the same object in view, a feature of general motorcycle design in the near future. The clutch on this model is of the steel disc pattern, running in oil, and the three-speed gearbox provides ratios of 5, 7.7 and 12.2 to 1, with 26 by 3 in. wheels. The final drive is by means of a $\frac{5}{8}$ in. by $\frac{3}{8}$ in. chain, protected by an efficient one-piece guard, which does not interfere with the removal of the back wheel. The power unit is secured in the duplex frame at three points, and is carried above frame member, protected from shock in case of a fall. The brakes are the same as those fitted to the big twin. Particular attention has been paid to the question of mudguarding, both guards being wide and deeply valanced. As the front leaf spring does not terminate in a scroll, as in the case of the 7-9 h.p. model, there is no need to divide the front mudguard, and the problem is consequently simplified.



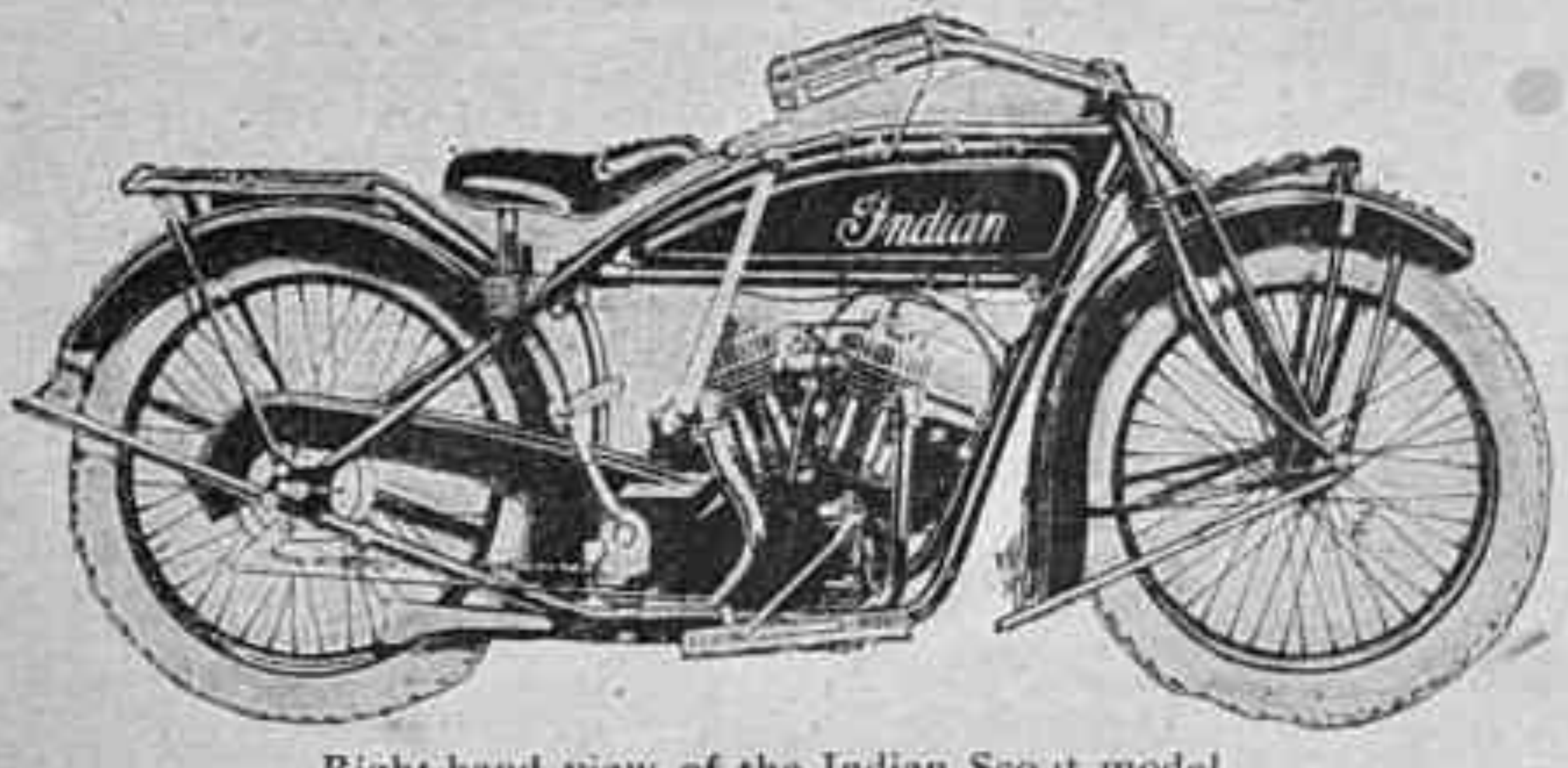
Left-hand view of the Scout model.

Attractive Finish.

Both machines are finished in Indian red with gold stripes, and the prices decided on, which it is hoped will be maintained throughout the season, are as follow:—

Scout (model G20)	£115
With sidecar	£145
7-9 h.p. (model NE20)... ...	£145
With sidecar	£175

The price in the case of the big twin includes electrical equipment and rear-driven speedometer.



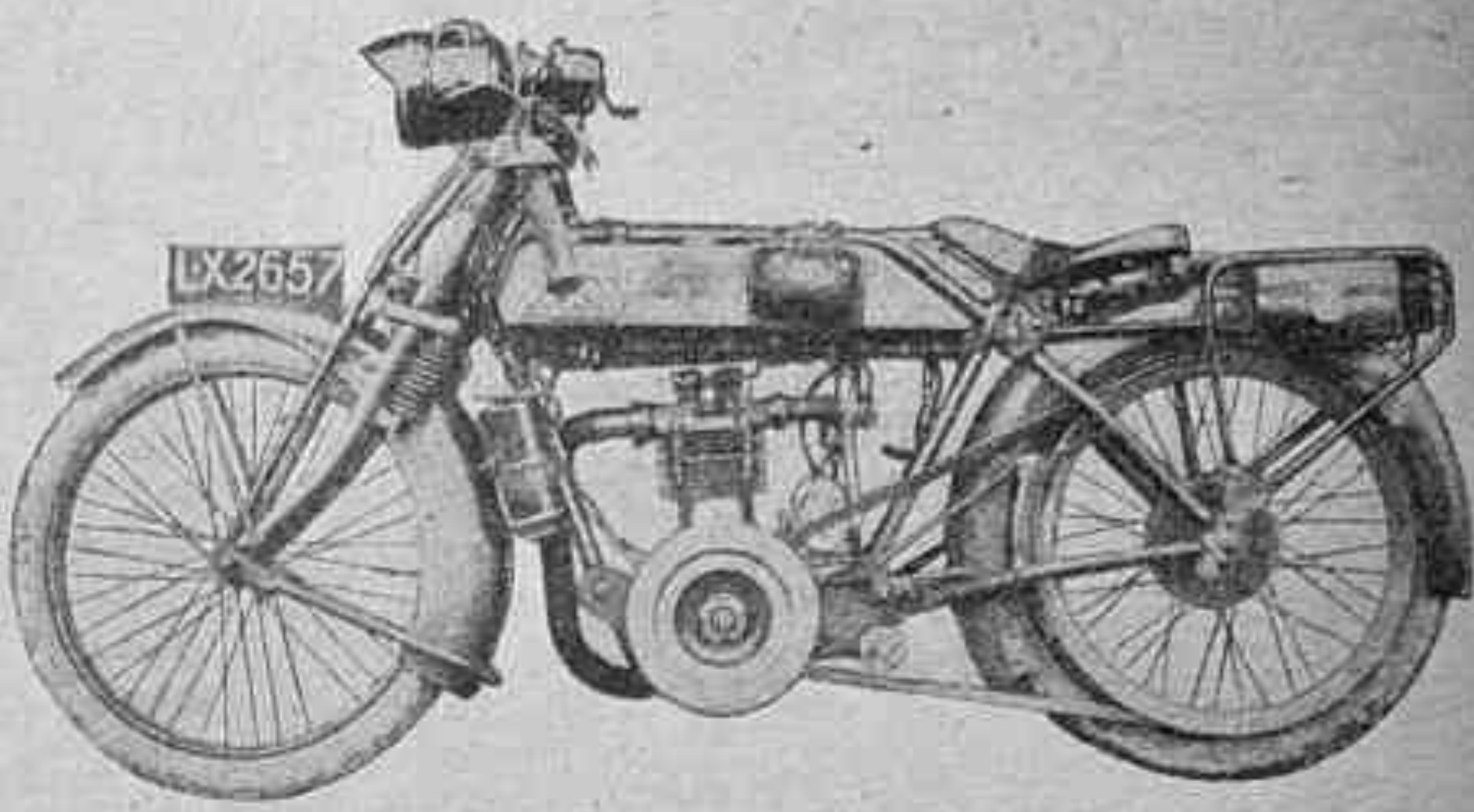
Right-hand view of the Indian Scout model.

A SPORTSMAN'S MOUNT.

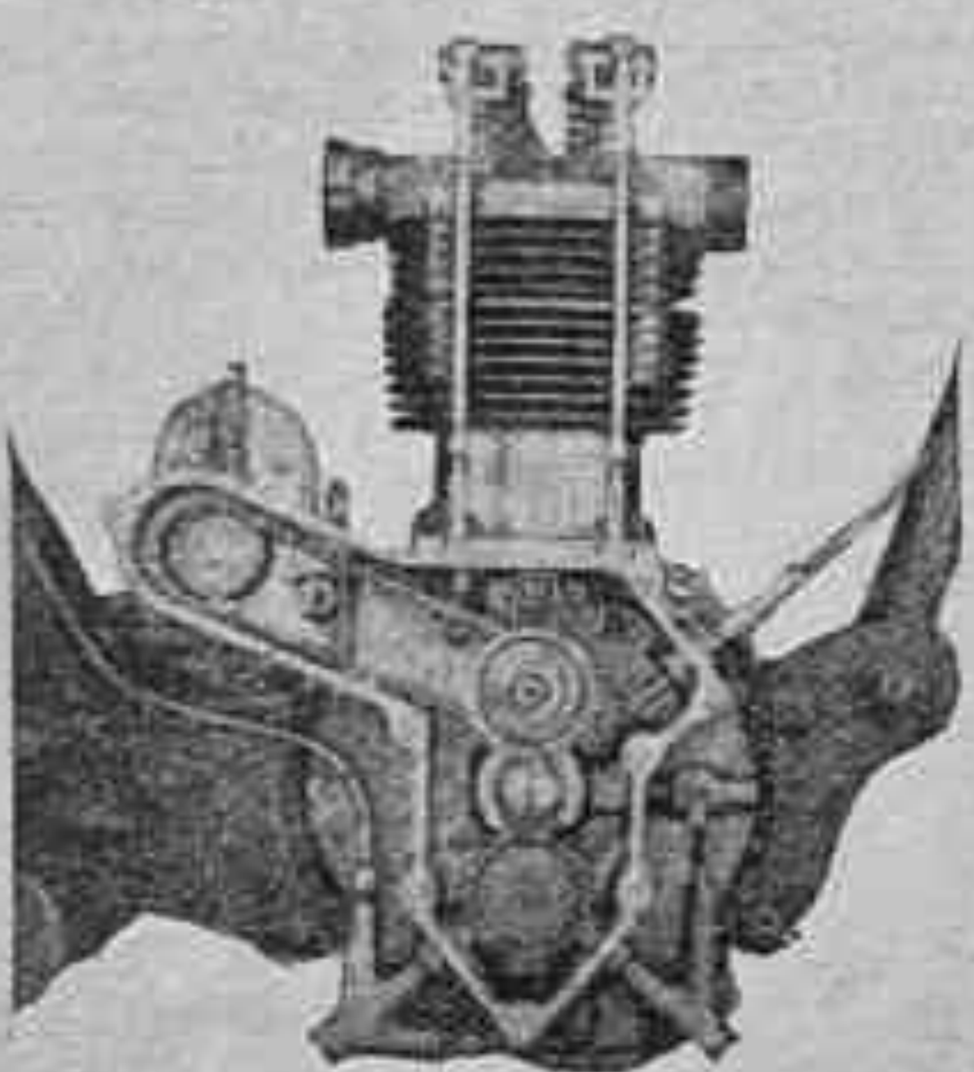
The Duzmo 3½ h.p. 495 c.c., Mechanical Lubrication with "Dry Sump."

THE tendency of design to-day being what it is, it is refreshing to find a concern possessing sufficient confidence in the future of the single-cylinder to launch out on entirely new lines, embodying features not found in an orthodox production. Such is the Portable Tool and Engineering Co., Ltd., of Hertford Road, Enfield Highway, who have on the stocks an interesting single-cylinder machine called the Duzmo, which comes within the 500 c.c. class, and promises to be a very "hot stuff" mount.

The feature of the machine is undoubtedly the engine, which is of 88.9



The complete machine presents a decidedly racy appearance.



Mechanical details of the engine.

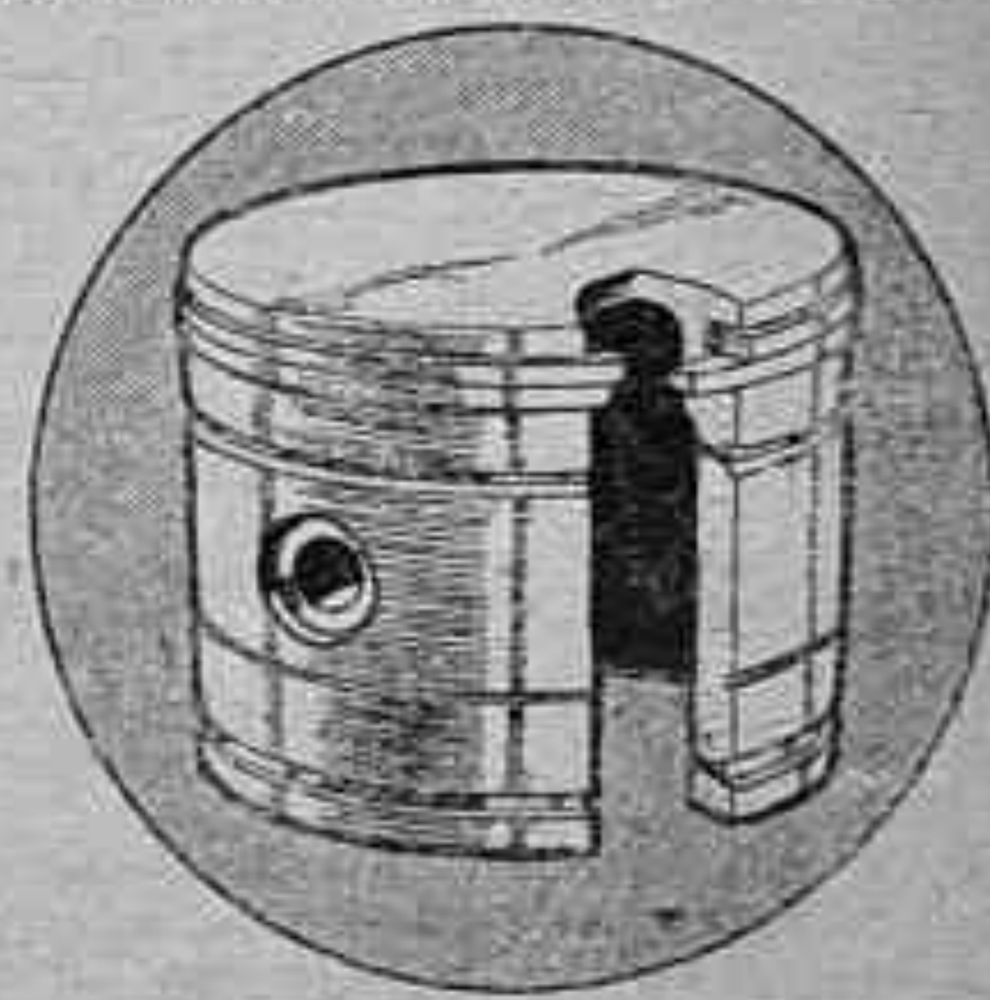
mm. by 79 mm. bore and stroke, giving a capacity of 495 c.c. The design embodies mechanical lubrication under pressure, overhead valves, detachable head, outside flywheel, and aluminium piston.

Engine Features.

To deal with the salient features one by one: the cylinder barrel and detachable head are of cast-iron, and in the production model will be retained in position by long bolts, dispensing with the lugs shown in the illustration, which are found to retain the heat unduly. The valves are of the overhead type, made of tungsten steel, of the same specification as that approved by the Air Board for Rolls-Royce aero engines. Mr. Wallace, the designer, stated that he had never known one of these valves to break, either in his own production or otherwise, except at the collar, and should this occur in the Duzmo, a ridge prevents the valve dropping and damaging the piston. The valves are operated by adjustable tappets and rockers in the usual way.

A Novel Lubrication System.

The lubrication is mechanical, on the "dry sump" system, a method employed to a large extent on some of the most successful aero engines. Two pumps are employed, driven by an eccentric formed on the bottom pinion carried in the timing gearcase; the front pump is for delivery, and that at the rear returns the oil from a sump cast in the bottom of the crankcase to the oil tank, the long pipes cooling the oil very effectually. In operation, the lubricant passes from the tank through a pipe to the forward pump, and is forced through a channel in the crankcase to the plain bearing on one side and a roller bearing on the pulley side, afterwards passing through ducts drilled in the crankshaft to the big-end, and then through the connecting rod to the floating little-end bush. Continuing its journey, it lubricates the piston walls, and falls to the sump at the bottom of the crankcase, being returned to the tank by means of a separate pump. This system provides oil under considerable pressure to all the important engine bearings, and

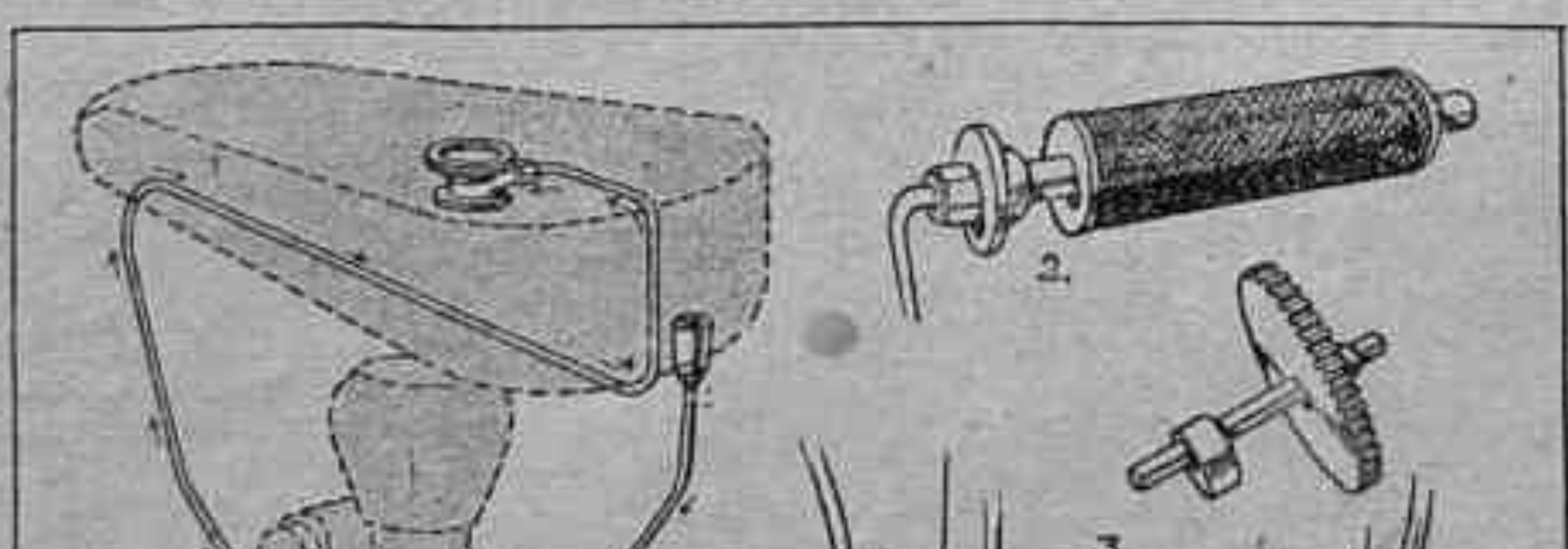


Details of the aluminium piston.

has proved so satisfactory and reliable in practice that the sight feed shown in the illustration will be dispensed with.

The piston is of aluminium alloy, with two drilled oil-retaining grooves, and two narrow rings, both carried in the same slot. The under side of the head is webbed to provide extra strength. The little-end is of the floating type—that is to say, the gudgeon pin and bush are a working fit in the piston and connecting rod respectively, which reduces considerably the relative amount of movement of all the working parts, and renders seizure a practical impossibility, in fact, nothing short of running the engine absolutely dry could possibly cause this.

The C.A.V. magneto is driven by chain, the driving sprocket being mounted on the cam wheel shaft. The chaincase is cast integral with the crankcase. In place of the plain exhaust pipe illustrated, an efficient silencer with long extension pipe will be fitted to the production machines.



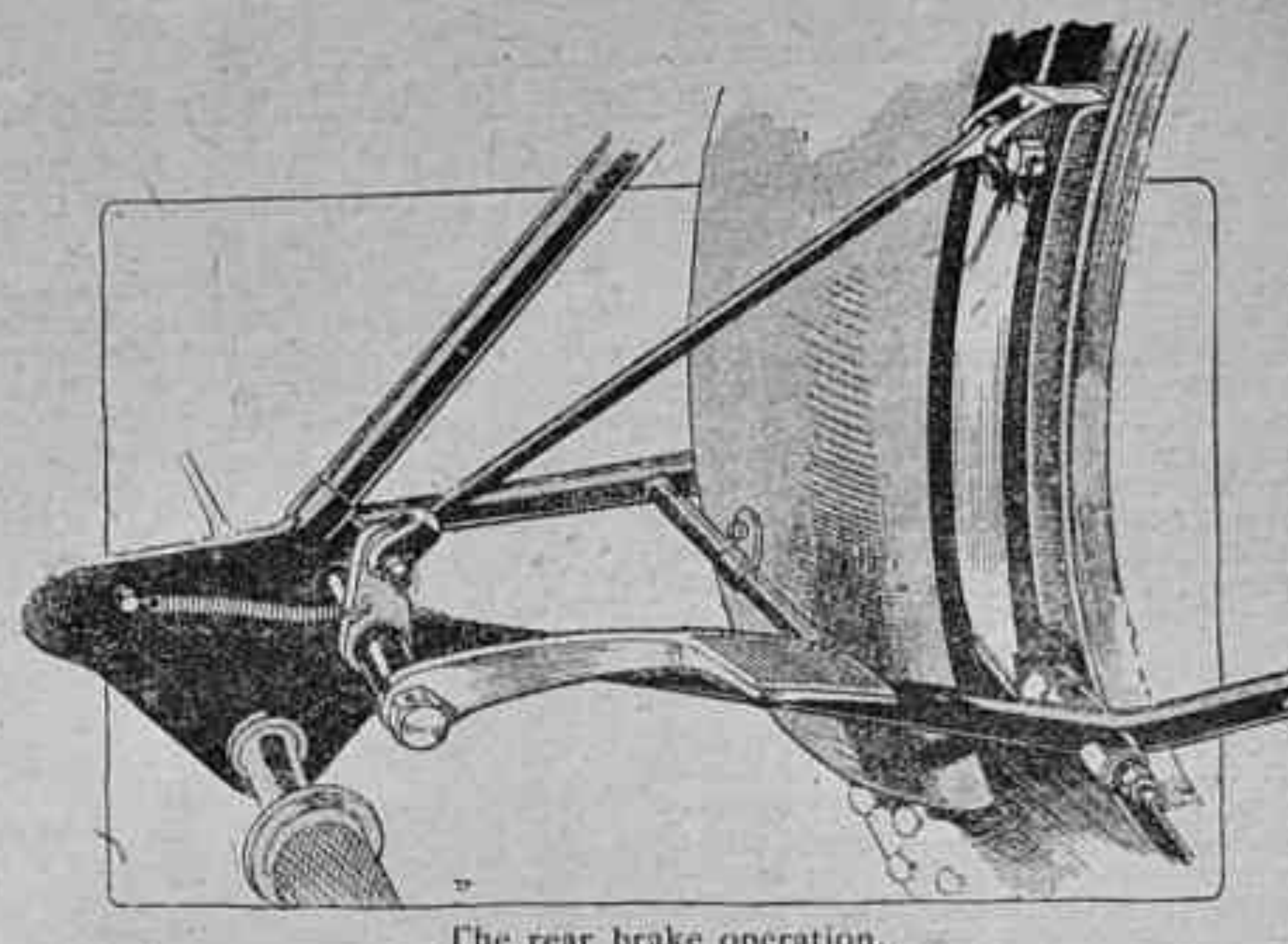
How the mechanical lubrication functions.

A Sportsman's Mount (contd.).

Strength in the Frame.

The frame embodies duplex front and rear down tubes, and the back portion of the mudguard will be made readily removable with the carrier, in order to give access to the back tyre. Both brakes operate on the rear wheel; the one on the right is of the internal-expanding type and the other works inside the V of belt rim. Druid double-acting Mark II spring forks will be fitted as standard.

The tank is very large, and has a capacity of 2½ gallons of petrol and ½ gallon of oil. We were glad to notice that the filler caps were of sensible size, and that a petrol filter had not been forgotten. Either an A.M.A.C. semi-automatic or a Binks' three-jet carburetter can be fitted according to customer's desire, the Binks at an extra cost of 35s. Back and front stands are included in the design, the first-named being of the spring-up pattern. The specification includes Palmer 650 mm. by 65 mm. tyres on the new S.M.M.T. standardized rims, knock-out spindles to both hubs, 1 in. belt with adjustable pulley, ample valances to the mudguards, and a soundly constructed rear carrier. Orders are being accepted at £73, and delivery will commence in February. The machine is a most interesting one, and riders desiring a fast sporting machine will do well to keep the Duzmo in mind.



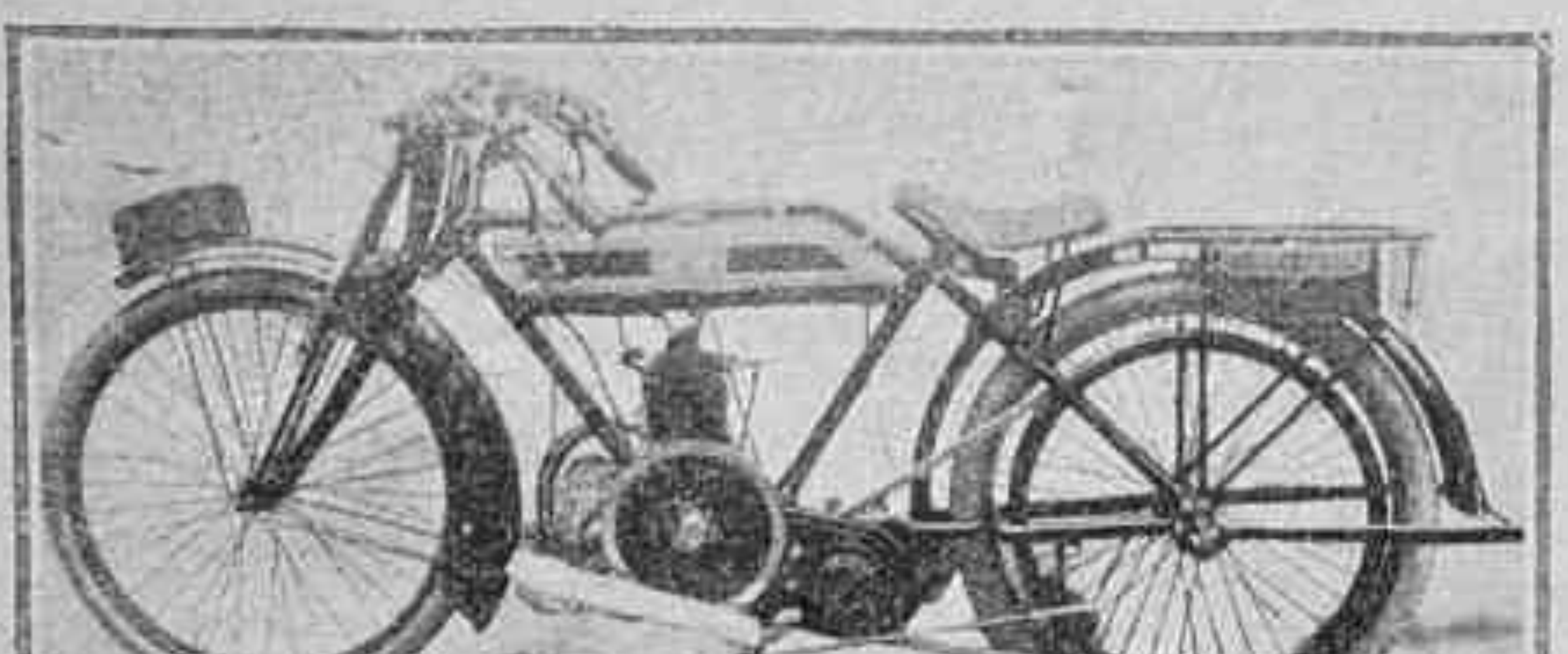
The rear brake operation.

ANOTHER TWO-STROKE LIGHTWEIGHT.

Choice of Three Models — Equipped with Villiers Engines.

Of the many lightweights fitted with the well-known Villiers power unit, one of the most attractive is the P. and S., which is being marketed by Messrs. Pearson and Sopwith, of 60, Mortimer Street, London, W. During a visit to the concern's showrooms the other day, we were able to examine the various models in detail, and came away with a very satisfied impression of the P. and S. motorcycle.

The Villiers two-stroke engine is so well known as to require no detailed description: it will suffice if it is said that its reputation is of the very best. With an Amac carburetter, M.L. magneto, and Best and Lloyd drip-feed lubricator, it will be seen that the specification regarding these details leaves nothing to be desired. Either Brampton or Druid forks can be fitted at customer's option, and as a Lycett's pan seat is part of the regular equipment the comfort of the rider is assured.



The P. and S. lightweight with Villiers engine.

A choice of three models is offered: a single-speed machine at £54, a two-speed model with Albion gearbox at £63, and a two-speed handlebar-controlled clutch and kick-starter model, with Burman gearbox, at £70. Either semi-T.T. or touring bars can be fitted. The tank is finished in aluminium, with red panels, considerably enhancing the appearance of the outfit.

We understand that Messrs. Pearson and Sopwith are engaged in the production of a motorcycle combination, to be fitted with either a 6 or 8 h.p. J.A.P. engine, to sell at £137 16s., also a 2¾ h.p. solo machine, fitted with a J.A.P. engine, at £61, particulars of which will appear in *Motor Cycling* in due course.

THE 1920 NORTON.

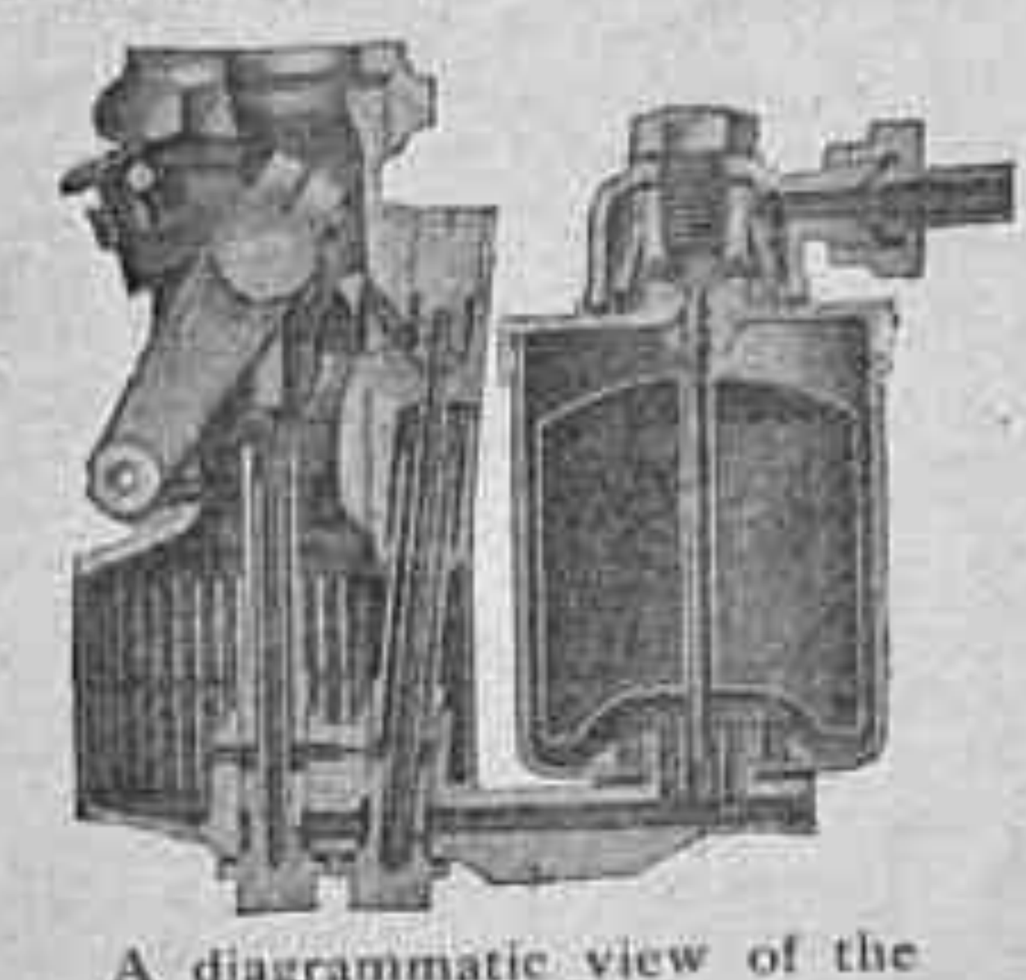
Messrs. Norton Motors, Ltd., of Aston, Birmingham, inform us that their next year's models will be identical with their present production, they having found no reason to alter their design. They are concentrating on three models—the Utility machine, with "Big Four" engine, three-speed gearbox and enclosed all-chain drive, suitable for heavy usage with or without sidecar; the 3½ h.p. Sports model, a lighter pattern with similar gearbox and semi-enclosed transmission; and the 3½ h.p. Speed model, a T.T. machine with direct belt drive, which can be supplied with an official certificate showing it to have attained a speed of 75 m.p.h. at Brooklands. In connection with the latter model, the manufacturers point out that the certified speed does not represent the limit of which the machine is capable, but merely the speed which has been exceeded. The fact that Messrs. Norton are able to supply this certificate shows that their engines do not suffer from that "post-war mediocrity" which is supposed to exist.

A NEW TYPE OF ZENITH CARBURETTER.

Special Motorcycle Sizes Now Being Made.

AMONG the interesting accessories exhibited at the Paris Show was the new Zenith carburetter series M. This model is particularly suitable for motorcycles, and is made in two sizes, viz., 11 mm. flange designed for a single-cylinder engine up to 75 mm. bore, two-cylinder engine up to 60 mm. bore and a four-cylinder engine up to 50 mm. bore. The second size, viz., fitted with a 22 mm. flange, is suitable for a single-cylinder engine up to 90 mm. bore, a two-cylinder engine up to 75 mm. bore, and four-cylinder up to 65 mm. bore.

On referring to the illustration it will be seen that a nut fixing has been employed instead of the usual Zenith flange. The instrument is made of bronze, nickel-plated, and consequently is not affected by weather conditions. It is particularly accessible and easily adjusted. The air suction is so arranged that mud and dirt are excluded from passing through the air ports. The petrol enters from the top of the float chamber, the usual nipple and nut being used with a tapered cone seat. From here it passes through the filter, which is readily detachable by means of one nut. The petrol enters the float chamber through the needle valve. It then passes along a channel to the slow-running main and compensating jets. When the throttle valve is only slightly open suction is created on the slow-running jet (which is set at a slight angle) and the size of the



A diagrammatic view of the new Zenith.

orifices both of the petrol exit and the air port are proportioned to give the correct amount of mixture for starting and slow running. The gradual opening of the throttle causes greater suction on the slow running jet until the position of throttle opening is reached where depression is created on the main and compensating jets. These are placed one inside the other.

The well-known Zenith principle of jet action is employed in which the main and compensating jets balance one another according to the speed of the engine. The main air intake surrounds each chamber and consists of a number of slots which can be varied in size in proportion to the amount of air required. This carburetter can be obtained either as a vertical or horizontal type.

Particular attention has been paid to the question of taking the carburetter to pieces when necessary, the main and compensating jets are removed from below the carburetter and the slow running jet is fixed in such a manner that it can be removed after the locking screw that holds it in position has been slacked off. The filter can be taken off by undoing the nut on the top of the float chamber. The throttle lever operating the butterfly valve can be set to any convenient position and a set screw is provided to regulate the minimum position of throttle opening for slow running.

A ONE- OR TWO- SEATED SIDECAR BODY.

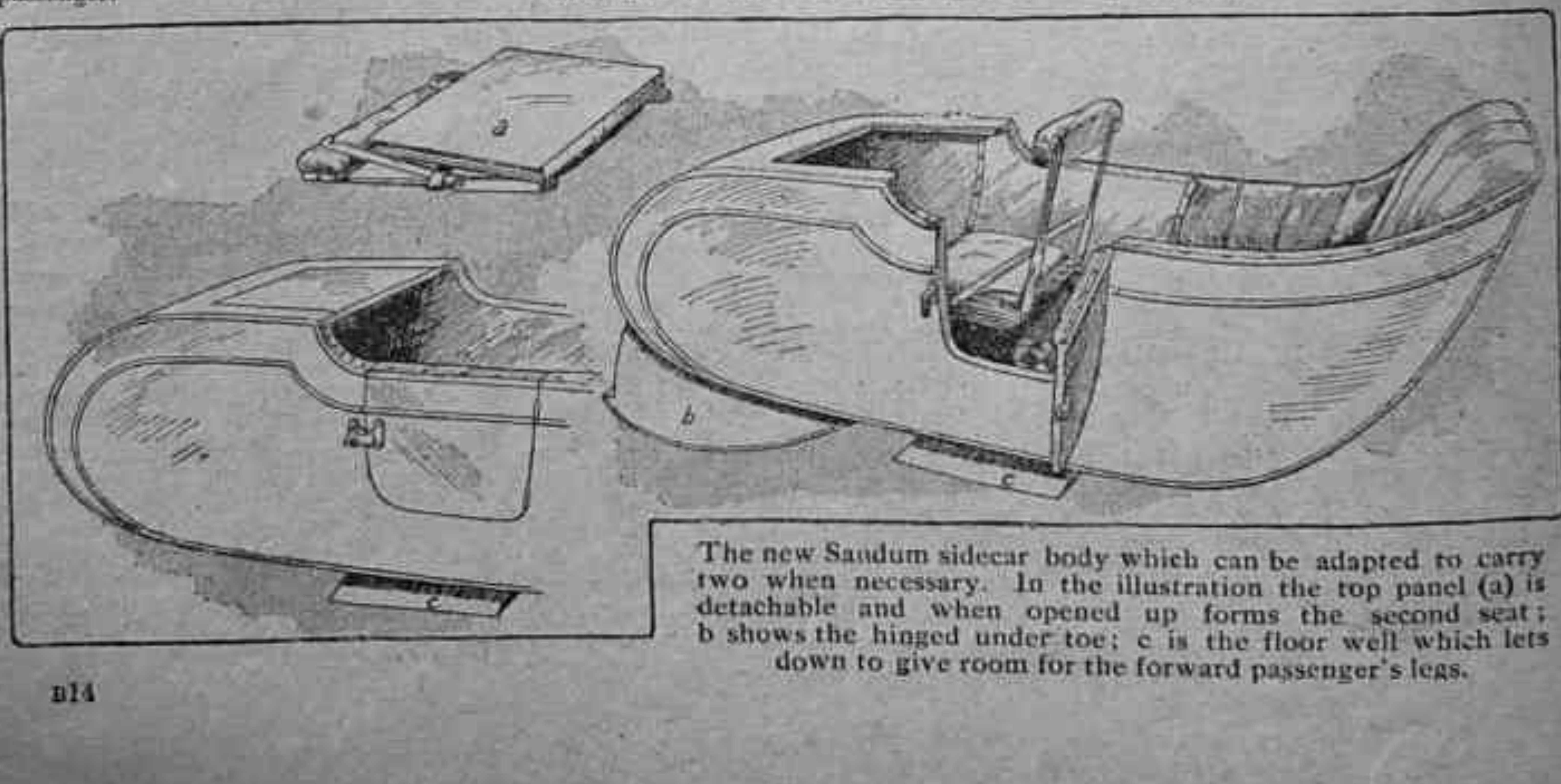
AN extremely novel idea for carrying an extra passenger in the sidecar without in any way increasing the size of the body beyond that in ordinary use for a single seater has been patented and is manufactured by the Sandham Engineering Co., of Gray's Inn Road.

Realizing the fact that there is probably nothing more absurd looking on the road to-day than the double-seater sidecar when occupied by only one person, they set out to make a two-seater which would have the appearance of a single seater when there was no second passenger.

A glance at the drawing will give some idea of how this has been carried out. The top of the front of the body (a) has been so constructed that it will slide out. The underside of this is upholstered and fitted with a back, which folds up when not in use. This part is placed on bearers situated on the sides of the body and then becomes a second seat.

If this was all we are afraid that the body would have been very cramped owing to lack of leg room. Realizing this the makers have made ample provision for leg room for both passengers in a very ingenious way. The under part of the "toe" of the body (b) is hinged and lets down, as shown in the sketch, and in order that draughts, dust and dirt may be excluded this hinged front is made with false sides which fit close to the sides of the body proper. When not in use this is closed up and is indiscernible.

In order to provide foot room for the back passenger a well (c) has been made in the floor of the body, in which the feet are placed when a second passenger occupies the space in front. When the body is on the sidecar chassis this well is unnoticeable.

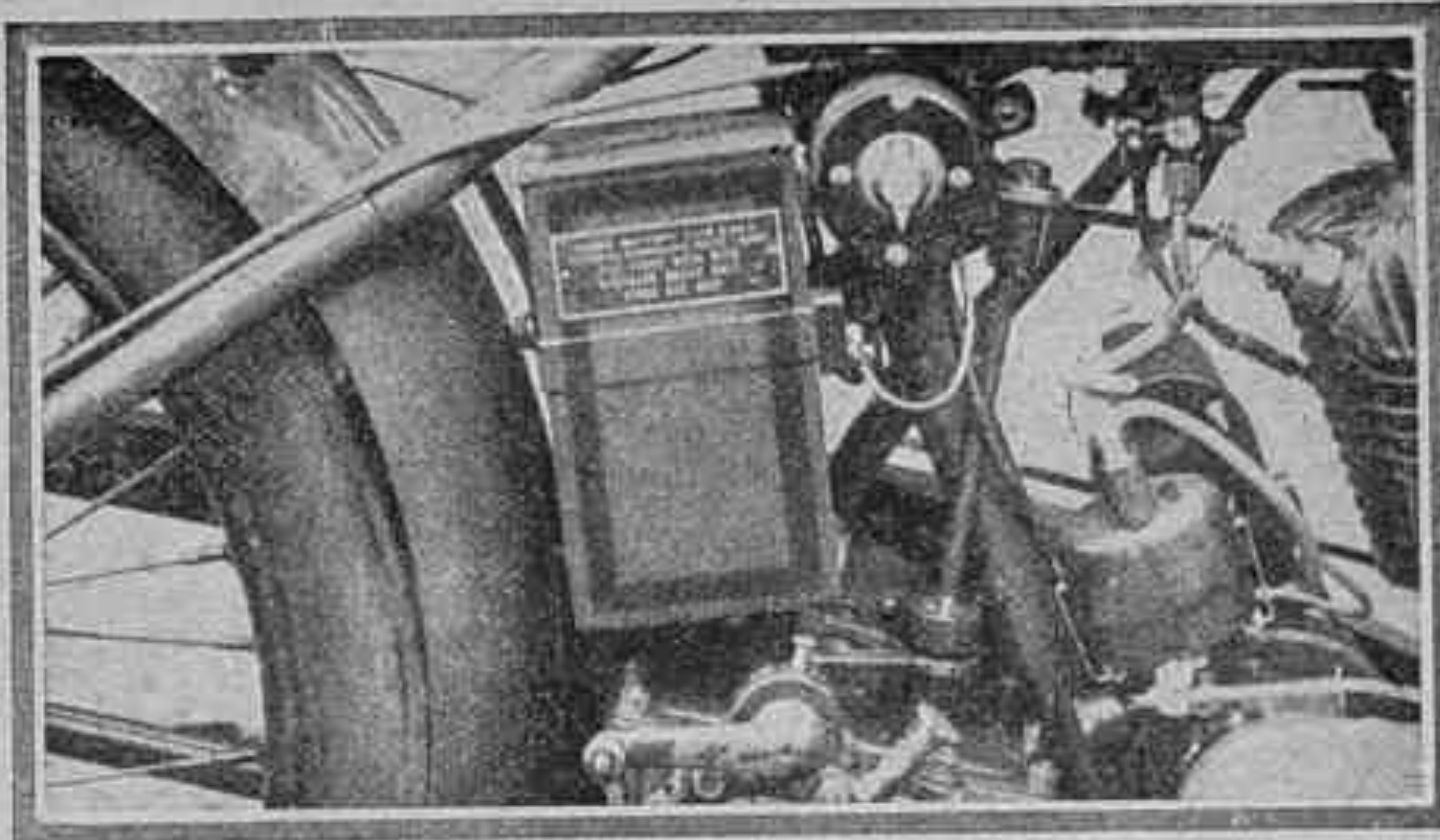


The new Sandum sidecar body which can be adapted to carry two when necessary. In the illustration the top panel (a) is detachable and when opened up forms the second seat; b shows the hinged under toe; c is the floor well which lets down to give room for the forward passenger's legs.

— THE —

HARLEY-DAVIDSON FOR 1920.

Few Alterations—Remy Ignition and Lighting System Retained.



The arrangement of the electrical equipment of the Harley-Davidson. Note the accessibility of the contact breaker.

THE 1920 Harley-Davidson motor-cycles, which are now beginning to arrive in this country, follow very largely the design of their this season's predecessors. No alteration whatever has been made in the engine, which is 84.1 mm. bore and 88.9 mm. stroke, giving a capacity of 988.88 c.c., and although rated at 7.9 h.p., develops 18 actual horse-power. The inlet valves are superimposed over the exhaust valves, the tappets being enclosed in tubular casings. A single cam wheel with a separate cam for each valve operates all four valves, a method which allows the utmost efficiency to be obtained from each cylinder and no doubt accounts in some measure for the remarkable power output. The carburetter is the popular Schebler automatic.

Larger Coil.

The Remy ignition and lighting system fitted to the electrically-equipped model has been altered in one small detail—the coil. This is now made larger, the object being to reduce the output from the generator, in order to prevent the possibility of the accumulators being overcharged.

On the score of comfort, the Harley-Davidson engineers have evidently devoted a great deal of attention to the problem of obtaining easy riding without hinging the rear portion of the frame. The saddle is large sized, with an amply padded top, very efficiently sprung, and is mounted on a spring seat pillar with knuckle joints. The front forks are exceptionally comfortable, and as the suspension is by means of encased coil springs, the whole assembly is of a much neater character than the majority of spring forks. The three-plate crown and triple head provide a construction with an ample reserve of strength, even under the severest conditions of sidecar work.

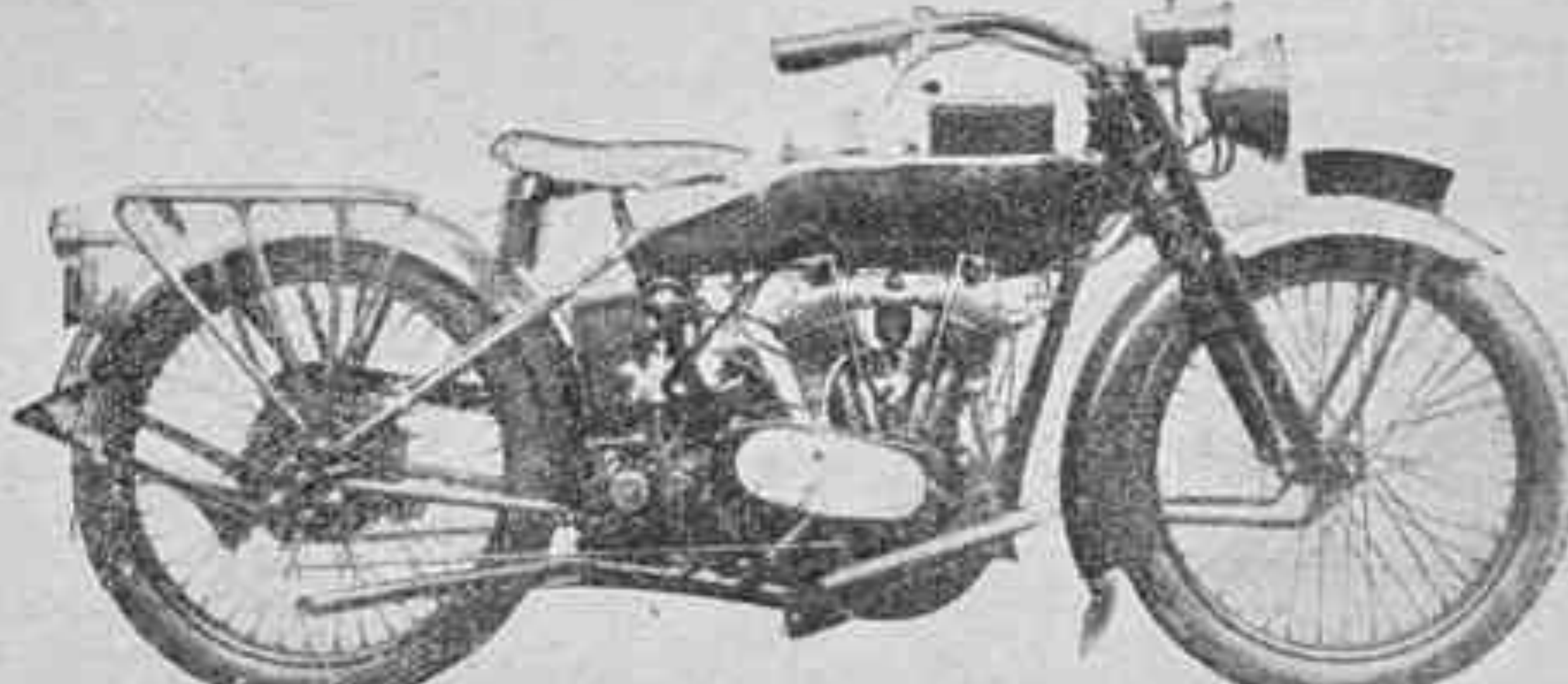
Transmission details generally are the same as previously employed, two refinements now added being a larger engine chain case, and provision for the self-lubrication of the clutch rollers, which is done by conducting a minute quantity of oil to the races from the gearbox. It may be mentioned that larger sprockets all round are now standardized, increasing the life of both chains and sprockets.

A description of the machine would not be complete without a reference being made to the large tank, which is divided, and completely shrouds the top tube, doing away with the usual nooks and crannies which harbour dirt and oil. The main tank holds one and three-quarter gallons of petrol, and the reserve tank half a gallon. The oil compartment holds one gallon. As each petrol tank has an independent supply to the carburetter, the smaller tank can be treated as a reserve supply to be used in case of emergency, so there is little likelihood of running out of petrol unwittingly.

As an example of the thoroughness with which the manufacturers cater for the English market, we might mention that the kick-starter and contact breaker, both on the left-hand side in the machines sold in the States, are placed on the right-hand side, in order to be in as accessible a position as possible.

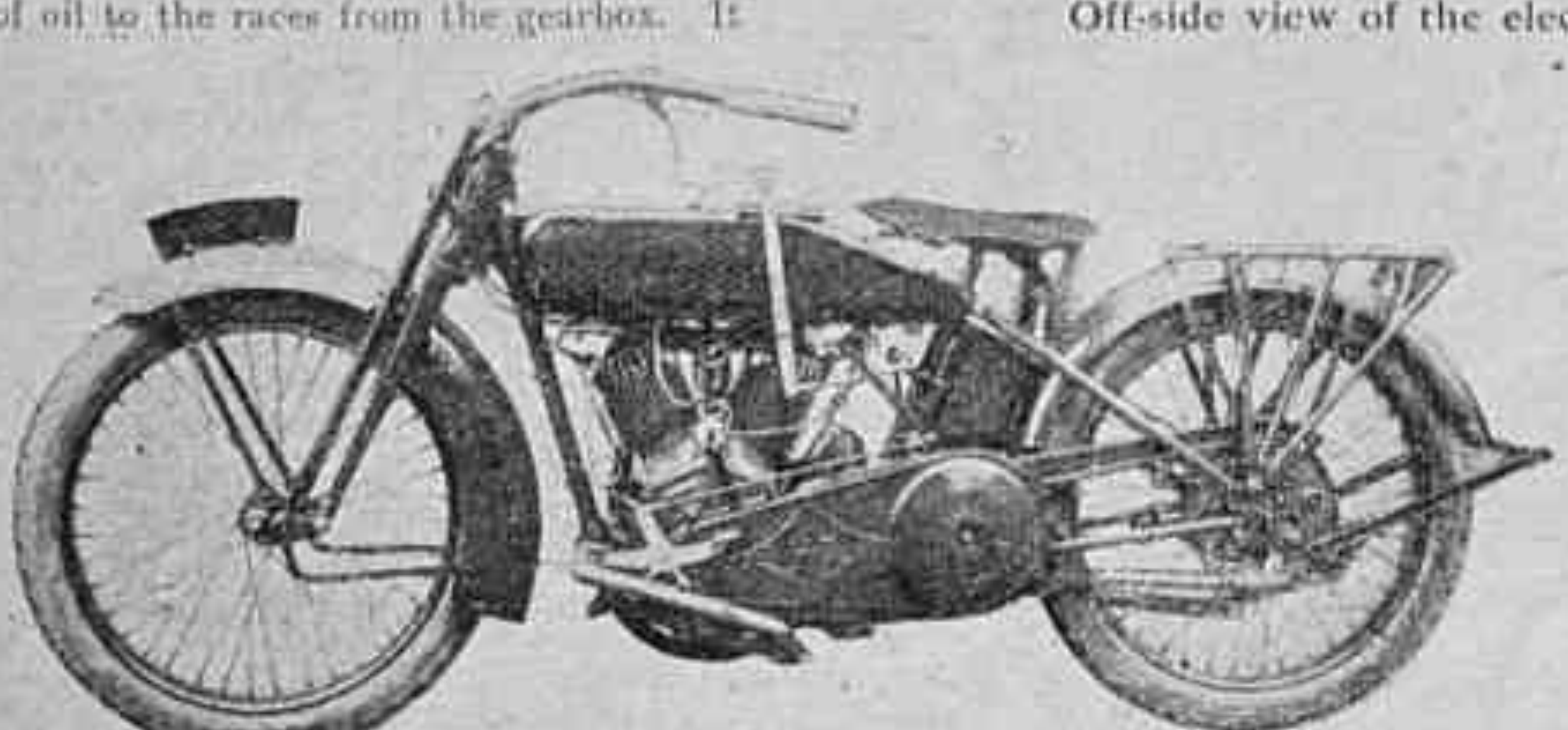
Proved Features Retained.

The mechanical lubrication and twist-grip control are so well known as to require no detailed explanation. A small refinement noticeable in this connection was the covering of the outer members of the carburetter and spark controls by leather cases where they were in close proximity to the frame, in order to prevent damage to the enamel. The silencer



Off-side view of the electrically-equipped model.

has been improved; while still of the same design, a different method of building up has been adopted in order to obtain increased strength. The Harley-Davidson sidecar is a very roomy affair, designed with a view to affording the utmost comfort to the passenger. The body is built of three-ply wood, the fore part being strengthened by the addition of a steel plate. The upholstery is carried out in an antique brown leather cloth, well stuffed and sprung. Three lockers are provided, one under the seat for tools, one under the front panel, and one, very capacious, in the rear. The chassis has the appearance of being immensely strong, and has four-point attachment, with quick detachable joints.



The magneto model Harley-Davidson.

SOME REFLECTIONS ON 1919 MODELS.

A Disappointed Rider's Criticism.

THE hopes of all enthusiastic motorcyclists are now centred around the forthcoming November Show, and they are wondering what the makers of the 1920 models will have to offer. The writer, frankly, is disappointed in most of the 1919 machines, of which he has had the opportunity of trying not a few.

After the wonderful impetus given by the war to the development of the motor trade and to engineering works generally, it was expected that the new motorcycle would be an immense improvement on the old 1914 model. Whilst it cannot be denied that the 1919 machine is far superior in many ways to its elder brother, there is still room for many improvements, and to the amateur rider the wonder is that these apparently glaring defects are still passed by in the workshops and testing grounds of the makers.

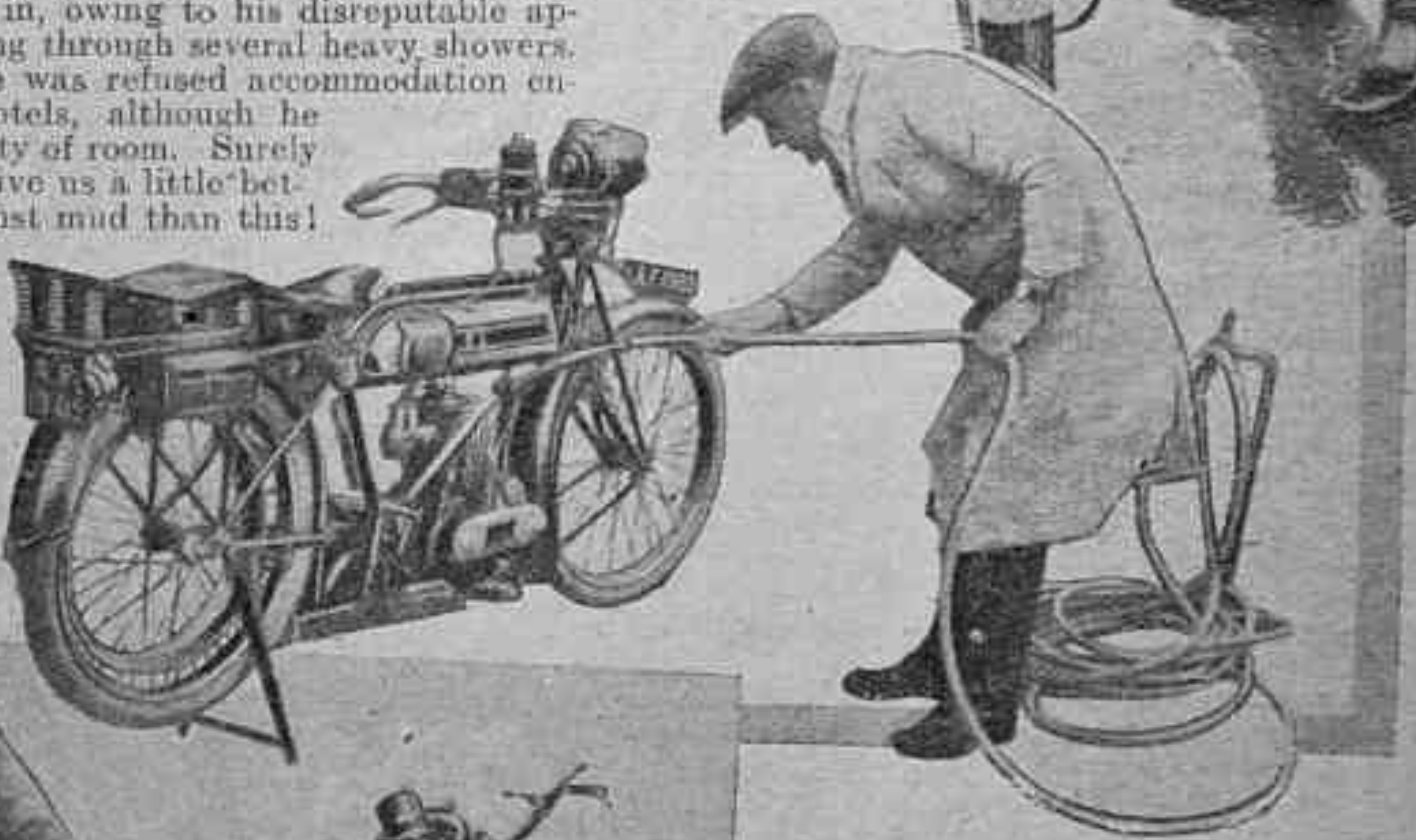
To consider but a few of the faults of present-day outfits. On how many machines could a rider travel, say, 10 miles after a heavy shower, and arrive at his destination in a presentable condition, unless he is garbed like a Polar explorer, or someone about to take the bridge of a ship during a rough night at sea!

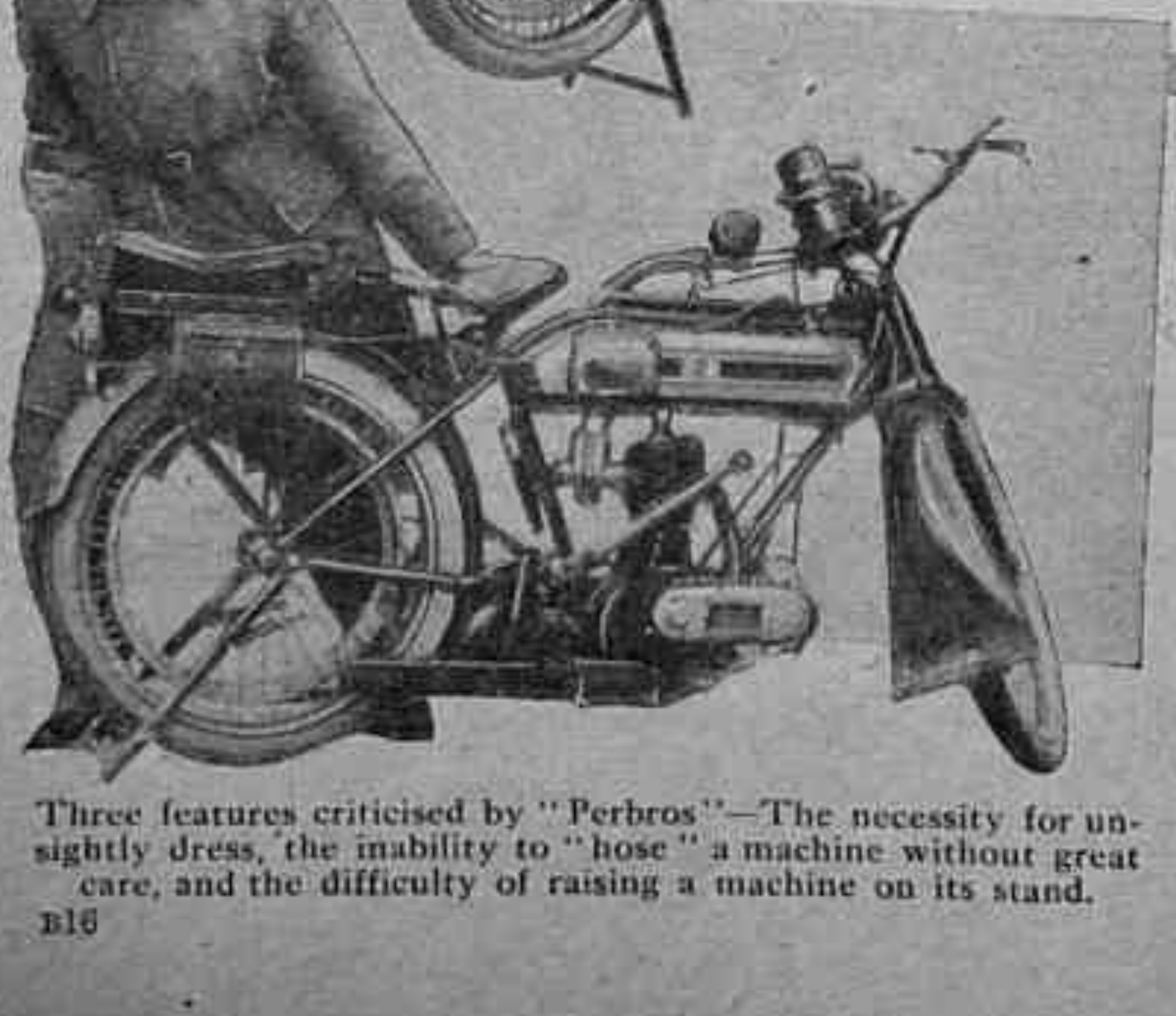
I recently had a chat with a well-to-do fellow motorcyclist who was on tour, and he said that his next mount would certainly be a small car, as he found the greatest difficulty in persuading the better class hotels to take him in, owing to his disreputable appearance after riding through several heavy showers. In fact, he said he was refused accommodation entirely at three hotels, although he knew they had plenty of room. Surely our designers can give us a little better protection against mud than this!

Then take brake design: Some of the new machines are provided with a fairly efficient footbrake, but as a rule, the hand applied front brake is of very little use indeed. I was much struck recently when testing a brand new spring frame mount to observe that the fitment on which the rider's safety and life depended was of the flimsiest construction. To the casual observer, it looked as though the designer of the machine had forgotten all about the brakes until the rest of the machine was completed, and then it appeared as though the foot brake was stuck on as an afterthought, likewise the front wheel brake. Neither was at all well designed, and in a sudden emergency, quite ineffective. When once applied, the springs fitted were too weak to pull the brakes off again; moreover, the foot brake had to be applied from a most unnatural riding position, and on a long hill the rider's leg quickly tired if the brake were kept on. This, mark you, on a machine which could not be called cheap, by any means, and which is supposed to be of quite the latest design! It should certainly be considered just as important, if not more so, to be able to stop a machine effectively as to keep it going.

There should be no need for all the fitments that at present encumber our handlebars and tanks, and anything tending to reduce the number of controls to be looked after by the rider, should be encouraged. Some makers have already made a start by fitting single-lever carburetters and me-







Three features criticised by "Perbros"—The necessity for unsightly dress, the inability to "hose" a machine without great care, and the difficulty of raising a machine on its stand.

Some Reflections (contd.).

chanical oiling systems—may the good work proceed. Then, too, there is the question of silent running. There is room for much improvement in this respect, and apart from a few "knuts" whose idea of a good engine is mainly centred about removing the exhaust pipe fitted by the makers, and substituting a copper pipe of a bore almost equal to the cylinder—everybody would welcome the introduction of an engine which progressed without the usual explosive roar associated with the present-day motorcycle.

Most riders are agreed that with the present rough state of the majority of our main roads, a spring frame is not only desirable, but absolutely necessary, and yet, how comparatively scarce such models are. The writer possesses a 1919 model single-cylinder machine which is considered to be in the front rank of motorcycles, but the unpleasant "nervy" sensation experienced after fairly lengthy runs has made him resolve that his next mount will have a twin-cylinder engine, and it will be fitted into a spring frame.

The Need for Strength.

Another minor, but albeit, important point which could be considered is the introduction of a satisfactory stand for motorcycles. Why it should be necessary to have to lift about 2 cwt. of metal clean off the ground to get the stand in action every time a stop is made, just to prevent the machine from toppling over, the writer has never been able to understand. A stay could surely be evolved that would come into action, with the back wheel remaining on the ground, thus doing away with the necessity of hoisting the machine. It would be an advantage, of course, and probably necessary, to have an arrangement to lift the back wheels clear, for tyre repairs, etc., and if some device that would enable the machine to be kept upright, and also to raise it when required, could be fitted in place of the usual type of rear stand it would be a real boon.

There is still far too much bright work on the present-day machine to make it really serviceable as an all-weather mount. The finish to be aimed at should be one that will allow of a hose being used for washing down purposes, without the aftermath of rust that invariably occurs at present if such a course is pursued. Plated handlebars, wheel rims, spokes and hubs look very nice when brand new in the showrooms, but very different indeed after continual use in wet weather.

Larger Section Tyres Needed.

Possibly because of the makers' desire to keep down production costs, many machines are still under-tyred, but a great deal of unnecessary discomfort to the rider is subsequently caused through his policy. It ought not to be left to the purchaser who has already probably paid a high price for the machine to have to fit "oversize" tyres to gain a little comfort in riding, and longer length of tyre service.

To sum up briefly, whilst in many respects the 1919 machine is a decided advance in design on its predecessors, our makers should not be content to rest on laurels won long ago, where the mere fact that a motorcycle was "reliable" was the only criterion by which it was judged. The present-day motorist demands something more than this, and with the ever-growing army of motorcyclists, a big demand awaits the firm able to place on the market at a moderate price a reliable and comfortable machine with the unnecessary crudities of the modern type eliminated. PERREOS.

Alsace Oil.

THE oilfields in Alsace-Lorraine, which have now been restored to France, produced something like 70,000 tons of oil just before the outbreak of war.

NOTES FROM THE MIDLANDS.

THE moulders' strike, although reported to have been settled last week, still continues at the time of writing, as the men have refused the terms which their leaders accepted. Motorcycle manufacturers are seriously affected, and the sales manager of one prominent Birmingham concern informed us that, being unable to obtain any more cylinders, they had been compelled to give their assemblers notice, and production was at a standstill. Another concern has had to abandon temporarily a new model which it had been hoped would be ready for the Show, on account of the impossibility of obtaining certain lugs required to complete the frame.

A Good Place NOT to Ride In.

Birmingham is not a pleasant place to motorcycle in just now, as, in common with other large towns cursed with trams, extensive track repairs are taking place, and whole streets are rendered impassable. Why a tramway company, or corporation for that matter, should be permitted to deface the public highway and render it unsafe for other traffic, to say nothing of stopping the thoroughfare at its own sweet will, passes one's understanding; one can only reflect that it was a most unfortunate thing that electric traction matured whilst the internal-combustion engine was in its infancy. In any case, why has not the electrobus, i.e., the mobile electric vehicle deriving its power from overhead feeders, and running on rubber tyres, been developed in this country as in Germany, where it is a popular means of transport? Vested interests are the reason, no doubt. It is to be hoped that the immense strides which are being made in motor transport will soon render tramway systems obsolete, as is gradually proving the case in America, since to no road users are the tram rails a greater menace than to motorcyclists.

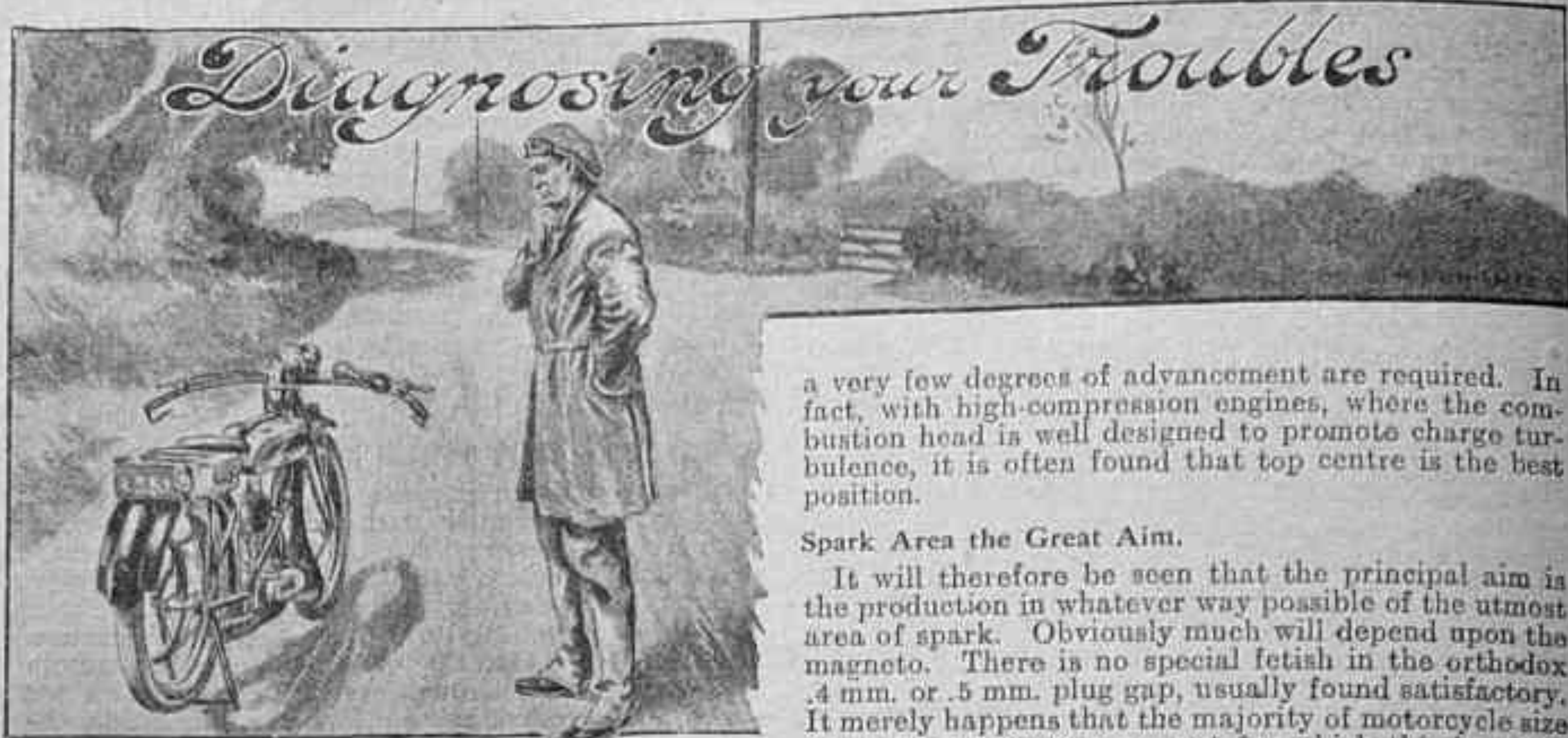
R.A.C. Trials.

TWO interesting official trials are now in progress under the auspices of the Royal Automobile Club. Last week the 10,000 miles test of the Rapson tyre was commenced, and the tyre is now covering its second weekly mileage of 1,000. The car being used for the test is a Rolls-Royce, and the trial is being watched by motorists with much interest. The new tyre is the invention of Mr. F. Lionel Rapson, who has introduced several revolutionary devices to the motoring world. It is claimed to be unpuncturable, and has already emerged from private tests quite triumphantly in this respect.

The R.A.C. have also under official observation the 10,000-mile test of benzole, the fuel being put forward by the National Benzole Association. By the courtesy of Mr. Lionel Rapson, this trial is also being conducted on the Rolls-Royce car on which the Rapson tyre is being tested. The engine of the Rolls-Royce was completely dismantled and its exact condition recorded before the benzole trial commenced, and at its conclusion it will again be dismantled that the R.A.C. experts may determine exactly what effect the new fuel may have on the various parts.

An International Conference.

MR. T. W. LOUGHBOROUGH, secretary of the Auto-Cycle Union, is calling a conference of national bodies in his capacity as secretary of the Fédération Internationale des Clubs Motocyclistes. The meeting will probably be held in London next December, when the curious situation which has arisen in America in connection with motor cycling competitions will be discussed. The representative American body associated with the F.I.C.M. is the Federation of American Motorcyclists.



The Characteristics of Various Faults and How to Recognise Them.

IN the previous instalment on this subject the more logical aspect of differentiating between different kinds of misfires was touched upon, but commonsense methods of diagnosis alone will, of course, only carry one a certain distance in running irregularities to earth. It is one thing to find the cause of trouble, and, frequently, quite another thing to cure it. Before, therefore, going on to discuss other ills to which the motorcycle engine is heir, it might be well to consider the question of ignition in a little greater detail.

Ignition Mysteries.

The effect of spark gap, for instance, and different kinds of plug electrodes, appears to be surrounded with much mystery from the amateur's point of view. Take first of all the gap itself. Quite a lot of people seem to think that the little feeler gauge attached to the magneto spanner is for measuring plug point gaps. It is true that by a coincidence the spacing of these parts respectively happens to coincide fairly closely, but the gauge in question is essentially for the magneto platinum points and not for the plug at all.

In spacing the plug points there are two points at issue, between which a compromise must be effected. First we must have them sufficiently close together to ensure that the spark will pass readily at slow speeds and bridge the air space under compression. Secondly, the gap must be wide enough to produce a spark of the necessary size, for the rate at which the earlier stages of combustion is initiated depends to an extent upon the area of the spark. Hence the apparent improvement in power with a big spark and the so-called self-advancing attributes of the magneto as compared to a coil which produces a progressively smaller spark as the speed increases and requires, in consequence, much greater attention to the ignition advancing arrangements. There is, strictly speaking, no difference whatever between the explosions produced from a weak and from a strong spark, but in the former case, owing to slower development, greater advancement is necessary. The effect of this is easily seen in the case of double-pole ignition where two plugs per cylinder are used.

In the ordinary way from 30 degrees to 45 degrees are frequently necessary at high speeds, but when the mixture is fired from two points simultaneously only a very few degrees of advancement are required. In fact, with high-compression engines, where the combustion head is well designed to promote charge turbulence, it is often found that top centre is the best position.

Spark Area the Great Aim.

It will therefore be seen that the principal aim is the production in whatever way possible of the utmost area of spark. Obviously much will depend upon the magneto. There is no special fetish in the orthodox .4 mm. or .5 mm. plug gap, usually found satisfactory. It merely happens that the majority of motorcycle size magnetos generate a current for which this is a convenient spacing. In some cases where a large and well-made machine is used this may be increased to .7 mm. or .8 mm.; in fact, up to 1 mm. Ordinarily, such a gap is not possible, and even if easy starting is obtainable under these conditions, it is asking a good deal of the secondary winding insulation and may readily lend itself either to breakdown or sparking in the safety gap, for the compression offers a very considerable resistance to the passage of the spark. Thus, the electric potential necessary to jump 1 mm. in full compression will bridge eight or ten times this space in air at atmospheric pressure. And, again, with regard to the lower limit, .4 mm. is, in the average case, approaching the minimum, for the reason that a smaller gap, although permitting the spark to pass with greater certainty, produces an arc of flame insufficiently large in many cases to fire a mottled charge. In order to appreciate this, one must remember that the spark passes with almost inconceivable velocity, and must endeavour to picture the charge as a whirling mass, not of a homogeneous gas, as many like to imagine it, but of a more or less coarsely-mottled mixture of fuel and air in various stages of combination, from pure fuel to pure air, with all grades of vaporized combinations in between. When this is realized, the cause of misfiring at low speeds with a very small gap is manifest.

Where a Wide Gap is Desirable.

Having regard to the exceedingly minute period of time occupied by the spark and the subsequent oscillations in passing, it is readily conceivable that the whirling mixture is virtually at rest in relation to the flame area produced, and that if this happens to be of small extent it can easily occur that at the moment of the discharge a non-combustible "mottle"—so to speak—may at that instant be surrounding it, in which case, of course, a misfire will take place. With a wide gap, on the contrary, presuming always that the magneto is equal to it, it is most unlikely that the flame will occur in an entirely isolated patch of incombustible charge. Although it is impossible to get a graphic proof of their actual size and shape, these can be fairly well estimated from a consideration of the size and spacing of the electrodes, and the degree of potential, in comparison with the mixture strengths at which misfiring commences to set in. Thus the weaker the mixture the larger becomes the "mottles" and the bigger is the spark necessary to bridge over incombustible areas which may surround it. It will be quite evident from this that a great deal depends

Diagnosing Your Troubles (contd.).

upon the degree of fuel disintegration and vaporization. For example, a small spark that will fire a mixture quite regularly at moderate and high engine speeds will repeatedly misfire when extremely slow running is attempted. This is perhaps not very noticeable in motorcycle engines, which never run really slowly, but in car practice it is well known that to make an engine "tick over" very slowly when running light a wide plug gap is necessary. The reason is that at low speeds the reduced induction velocity produces a relatively coarse and mottled mixture, which the small flame area of closely-approached points will not fire with certainty. Broadly speaking, therefore, with the average motorcycle magneto, .4 mm. is approaching the safe low limit to avoid misfiring through the spark passing in incombustible patches of mixture, and about .7 mm. is a fairly high average limit beyond which difficulty in starting may set in together with the risk of straining the armature winding.

Ethics of Plug Points.

The plug points are also important factors in ignition. It is generally easier to start with thin electrodes, because the current will more readily pass across sharp points than thick blunt ones, but in air-cooled engines there is always the eventual probability of pre-ignition setting in, due to incandescence, unless the plug is designed in such a way as to keep cool. Although it is generally conceded that single points are better than multi points, it is true that the burning action to which all such parts are subjected is less rapid in the latter case, and less frequent attention to the gap is therefore necessary. On the other hand, the spark is not so good, for there is a certain amount of leakage in the nature, apparently, of what is electrically termed "brush discharge," from those branches which are not sparking, thus tending to weaken the main discharge which, in extreme cases, may cause misfiring.

In this connection it may be mentioned that where the magneto is weak and starting difficult, in consequence, it is a good plan periodically to pass a fine file or strip of emery cloth over the faces of the electrodes to remove the fine granulations which they generally acquire as a result of the spark. These are a fruitful source of starting difficulties and misfiring, especially when the current output has fallen below normal.

Why Some Engines Misfire When Fully Advanced.

And now the reason for the magneto point gap comes to be considered, and its effect upon ignition. Makers are generally quite explicit as to the correct separation of the platinums, but it is a prevailing fault of nearly all books of instruction both on magneto and other adjustments, that while carefully explaining what to do, they will not take the public into their confidence and tell them exactly why. On the face of it there appears to be no very explicit reason why the separation of the contact points should be set with great accuracy. This particular injunction is therefore apt to be registered in the mind of the amateur as unnecessary fussiness, and neglected accordingly, with the result that we have the well-known stereotyped query, "Why does the engine misfire when the spark is fully advanced?" The reason is this: Twice in each revolution of the magneto armature it cuts the magnetic lines of force from the pole pieces. If turned gently by hand, the drag up to and beyond each maximum position can readily be felt, and at the position itself the armature will remain as though lightly stuck. It is here, when fully saturated, that the break should, theoretically, occur, but under working conditions the magnetic lag must be reckoned with. In other words, the armature does not obtain from the fields the full magnetic saturation until a little past this point in the direction of rotation. Having once become magnetized, it retains it for a considerable distance, i.e., in some cases 45 degrees of armature movement, corresponding to a 90 degrees retard on the crankshaft, as the magneto runs at half speed. It is therefore possible to break contact quite late and still get a good spark if the engine is running at a reasonable speed. Not so, however, on the advanced side of the maximum point, for in this case the spark falls off rapidly immediately the break, from any cause, occurs even a little before the field, and if the magneto is speeded up when breaking in this position the spark quickly vanishes to nothing, which is due, of course, to the progressive lag. Note now the action of the points. The wider the separation the sooner does the cam touch the fibre block and the earlier does the break occur. If, therefore, the contact breaker is designed for a point gap of .4 mm., which is the usual amount, it means that this will break the circuit in the most favourable position, and a comparatively small increase in such a gap causes the break to occur before the field, with the results described.

When the contact breaker is fixed, the engine will, therefore, consistently misfire above a certain speed if the points are too wide, but in the case of variable ignition, which is now pretty general on motorcycles, the trouble can always be recognized by the misfire being cured by retarding a little. L. MANTELL.

(To be continued.)



AT THE PARIS SHOW.
The Motosacoche stand was particularly handsome.



The Epping Road is now being relaid with concrete.

Lighting-up Time for Saturday, October 25, 1919.

London	5.17	Edinburgh	5.48
Newcastle	5.14	Liverpool	5.24
Birmingham	5.23	Bristol	5.27
Dublin	6.7		

Lighting-up time in the United Kingdom is now half-an-hour after sunset. Lamps must be kept alight until half-an-hour before sunrise. Moon.—New moon 23rd inst.

Motor Trade Annual Banquet.

THE ninth annual banquet of the Cycle and Motor Trades Benevolent Fund will be held at the Connaught Rooms, London, to-morrow. Mr. A. J. Wilson, founder of the Fund, will preside.

A New Gipsy.

THE latest applicant for membership to *Motor Cycling* Gipsy Club is Mr. Paul J. Lindbergh, chairman of the Abo Motorcykel Klubb, Abo, Finland, who rides a 1919 7-9 h.p. Indian combination.

Increase in A.B.C. Skootamota Prices.

AT a recent Board Meeting of Messrs. Gilbert Campling, Ltd., sole manufacturers of the A.B.C. Skootamota, it was decided to advance the selling price of this scooter to 49 guineas, an increase of £6 1s. This increase comes into force immediately.

Racing in Belgium.

THE speed trials recently run under the auspices of the Antwerp Motor Club were a great success, and some good speeds were recorded, despite the rather rough nature of the road used. The kilometre course had to be covered twice—once each way. The fastest time of the day was made by René van Hemck, on a 1919 Powerplus Indian, who averaged 103 kilometres per hour. The results were:—Solo machines: 1, René van Hemck (Indian), 35 secs and 36 secs.; 2, Bastiaens (Indian), 35 secs. and 37⅗ secs.; 3, Courboing (Indian), 36⅘ secs. and 38 secs.; 4, De Lafaille (Indian), 39⅕ secs. and 38⅖ secs.; 5, Van der Beecke (American Excelsior), 39⅕ secs. and 39⅗ secs.; 6, Didelot (B.S.A.), 58⅗ secs. and 1 min. 1⅕ sec. Sidecars: 1, Depret (Rudge), 50⅘ secs. and 1 min. 1⅘ sec.; 2, Van Eck Camille (Indian), 55⅘ secs. and 58⅗ secs.; 3, J. Wonters (Bradbury), 1 min. 9 secs. and 1 min. 12⅗ secs.

The Sangster Cup Trial.

THE Reliability Trial for the Sangster Cup organized by the Birmingham M.C.C. will take place on November 8th. Entries will close on the 5th. The Trial will take the form of a sporting run over a circular course in the Midlands of about 100 miles.

No Speed Limit for Blackpool.

A LENGTHY discussion in respect to the speed of motors took place at a recent meeting of the Blackpool Town Council, but it was decided not to apply for a speed limit. The chairman of the Watch Committee, speaking against the proposed limit, said it would be dangerous if a 10-mile limit was fixed in some streets. A speed limit for the borough had been considered on a previous occasion many years ago, and it was then thought it would be unwise to have one for Blackpool. Under the present law, no matter what the speed was, a motorist who was driving dangerously could be prosecuted.

A New Motor Fuel.

FOR a considerable time past we have heard a yarn, emanating from America, to the effect that a discovery had been made whereby motorcars and motorcycles could be driven as the result of certain chemical action on water. We have been rather inclined to take this tale cum grano salis. There is, however, more truth in it than was anticipated, for Alderman Ball, of Nottingham, father of the late Captain Ball, V.C., the famous airman, has used the mixture with considerable success on a motorcar. Mr. Ball was highly enthusiastic over the success, and estimated that 30 miles could be run on one gallon, which costs only fivepence. The mixture can be made and stored for any length of time like petrol. If the hand were dipped into the mixture, said Mr. Ball, the water evaporated, and gave off a smell like benzole. Mr. Ball gave several experimental runs for the benefit of scores of inquirers.

More "Experts"—Robert on the Spot—Misleading Advertisements.

The Expert Class.

THE name of H. B. Denley has been added to the Auto-Cycle Union's Open Competition list of experts. Denley usually drives a Morgan.

Social Evening at Barnet.

THE Finsbury Park C. and M.C. are holding a tea at "The Mitre," Barnet, at 5.30 p.m. on October 25th. This will be followed by a lantern exhibition and a musical programme.

Police Stop Speed Trials.

WHEN members of the Nottingham Club met at a secret rendezvous last Saturday week for the purpose of arranging speed trials, the police intervened before the events were concluded, and the programme had to be brought to an abrupt finish.



The start of the 200 mile International World's Championship at Marion, Indiana, U.S.A., which event was witnessed by 15,000 enthusiasts. Harley-Davidson machines secured the first three places.

A Tool Loaning Bureau.

ONE of the post-war developments of the Service Co., of High Holborn, London, W.C., is a tool-loaning bureau. At an early date they intend obtaining a comprehensive stock of expensive tools and appliances, such as compression gauges and valve cutters, which will be loaned to their customers at very low charges.

The Six Days' Trial.

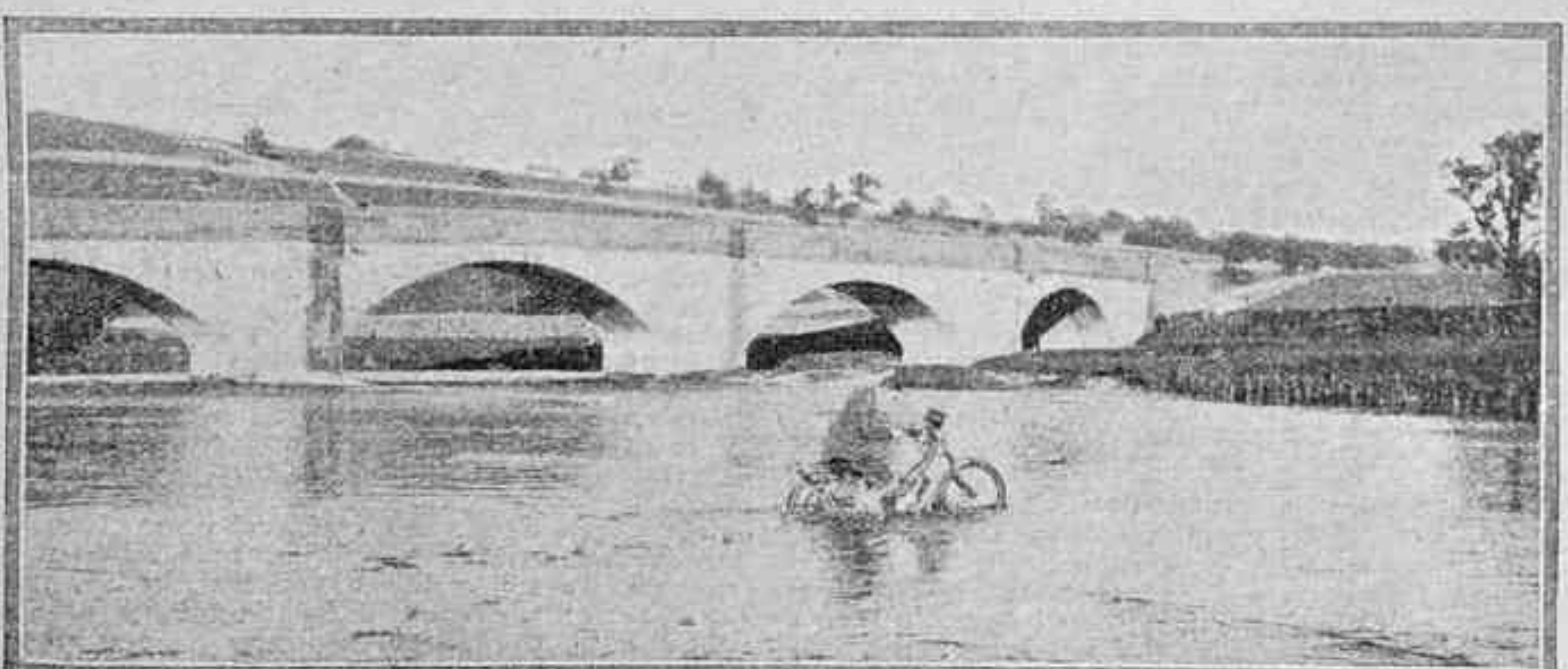
THE Auto-Cycle Union advises motorcyclists when reading the advertisements issued by the trade in connection with the Six Days' Trial to compare them with the official results, as in some cases the publicity notices might conceivably mislead the intending purchaser who is basing his selection on the performances of machines in this year's event. It would indeed be wiser to wait for the publication of the judges' report, which will throw light on many points which will be of extreme value to the public.

For Motorcyclists. A.-C.U. Consulates.

THERE is every reason to believe that the consular service of the Auto-Cycle Union will soon be a very valuable feature of the facilities offered by the Union to members. Application for the post of local consul is invited from members.

Motor Speeds at Hitchin.

THE local police have informed the Royal Automobile Club that owing to the excessive speeds at which motorists have been driving in Hitchin they are instructed to strictly enforce the provisions of the Motor Car Act. The R.A.C. is accordingly co-operating with the Hertfordshire Constabulary to prevent illegal driving in and about the town.

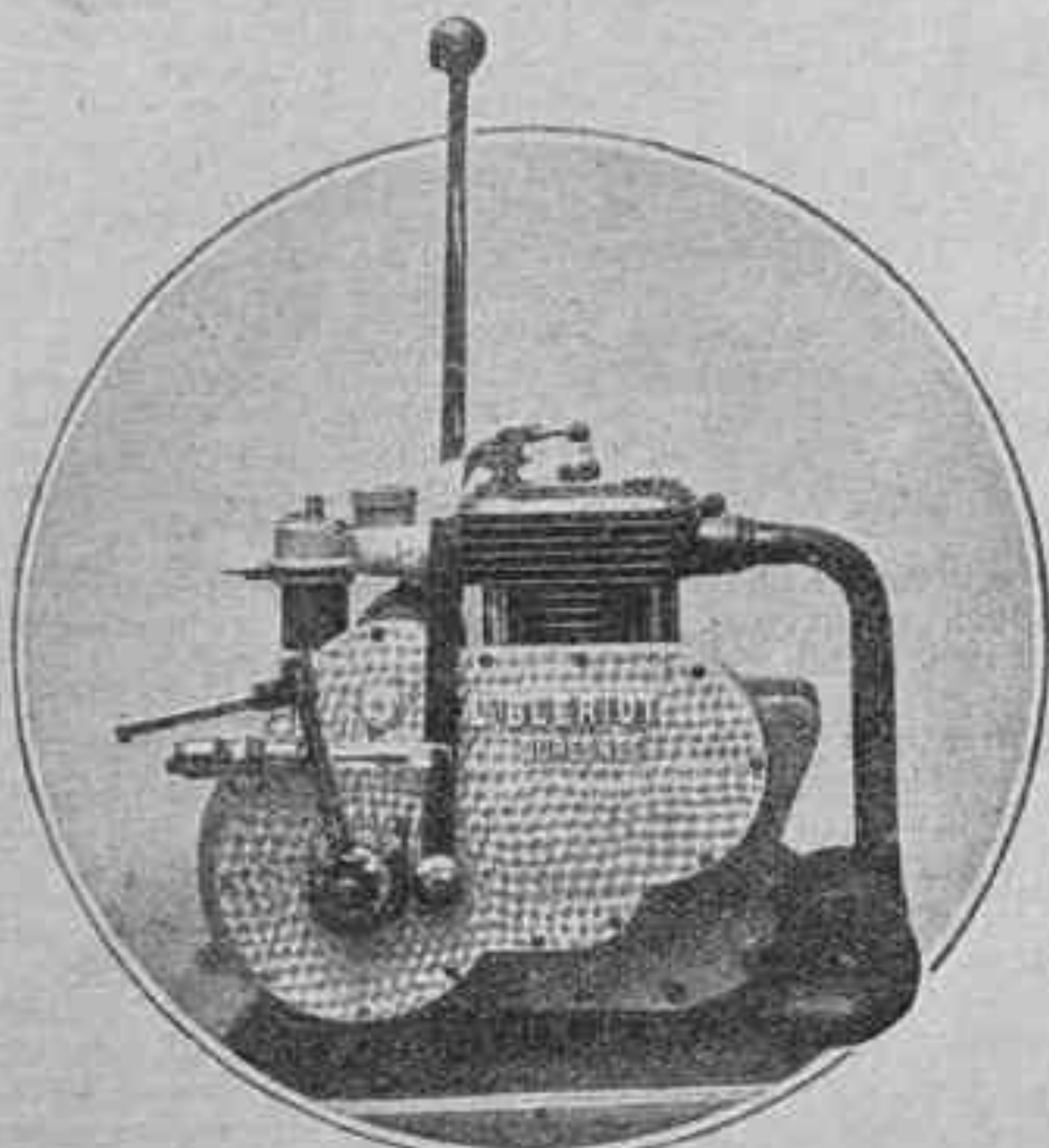


What the modern mororcycle can overcome. A scene in the recent Scott trial.

Mr. Alfred Bednell Honoured—A Novel Trial Regulation.

A "Motor Cycling" Machine for Sale.

IN consequence of the early arrival of a 1920 model of the same make, the Editorial 1919 Harley-Davidson combination which was the subject of the write-up in last issue of *Motor Cycling* is for sale. It is the special electrically-equipped model, and is unusually well fitted out. It has one or two features not incorporated in the standard Harleys. The sidecar has a specially large de luxe body with a bulbous back and very ample locker space. It is fitted with a folding hood and a three-leaf screen, which swings open with



AT THE PARIS SHOW.
Two interesting engines: the Bleriot twin with side-by-side cylinders and gearbox in one unit—

the door. The tyres are Goodyears, the rear being 29 ins. by 3½ ins.; all three are in good condition. The machine itself is mechanically perfect, and has been most carefully handled. So far as external appearance goes, the enamel and plating are practically new. Polished aluminium disc wheels and Bonniksen speedometer complete the equipment.

The price is £200, and letters should be addressed to the Editor, marked "Harley."

For the Olympia Show.

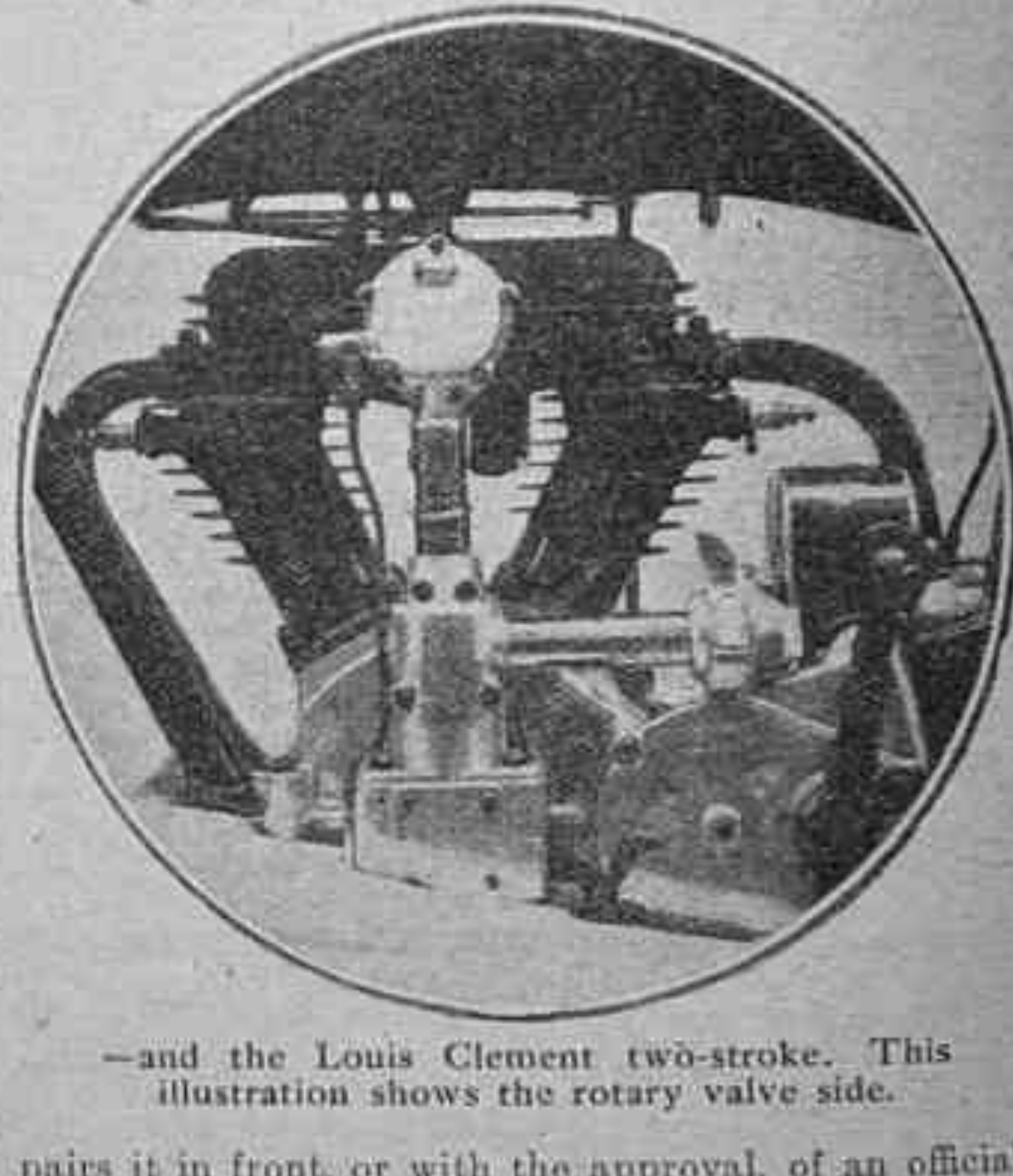
ON Saturday, November 29th, the Coventry branch of the N.M.C.F.U. have organized a run to the Motorcycle Show at Olympia. Those members wishing to visit the Show should communicate with Mr. T. Mallahein, 69, London Road, Coventry, stating number in party, so that accommodation can be arranged.

Faithful Service Handsomely Recognized.

AT a recent social function at the Queen's Hotel, Birmingham, Mr. Alfred Bednell, late general manager of the Cycle and Motor Cycle Manufacturers and Traders Union, was the recipient of a cheque for £1,000. This was a token of appreciation for his work in connection with the formation of the Union and the manner in which he had carried out the arduous duties connected with the shows. The Council also presented, as a personal gift, a set of ivories to Mrs. Bednell. It was a memorable gathering, and went to show the spirit of unity and comradeship prevailing in the council of the Union and the high esteem in which Mr. Bednell is regarded by the members of the Council.

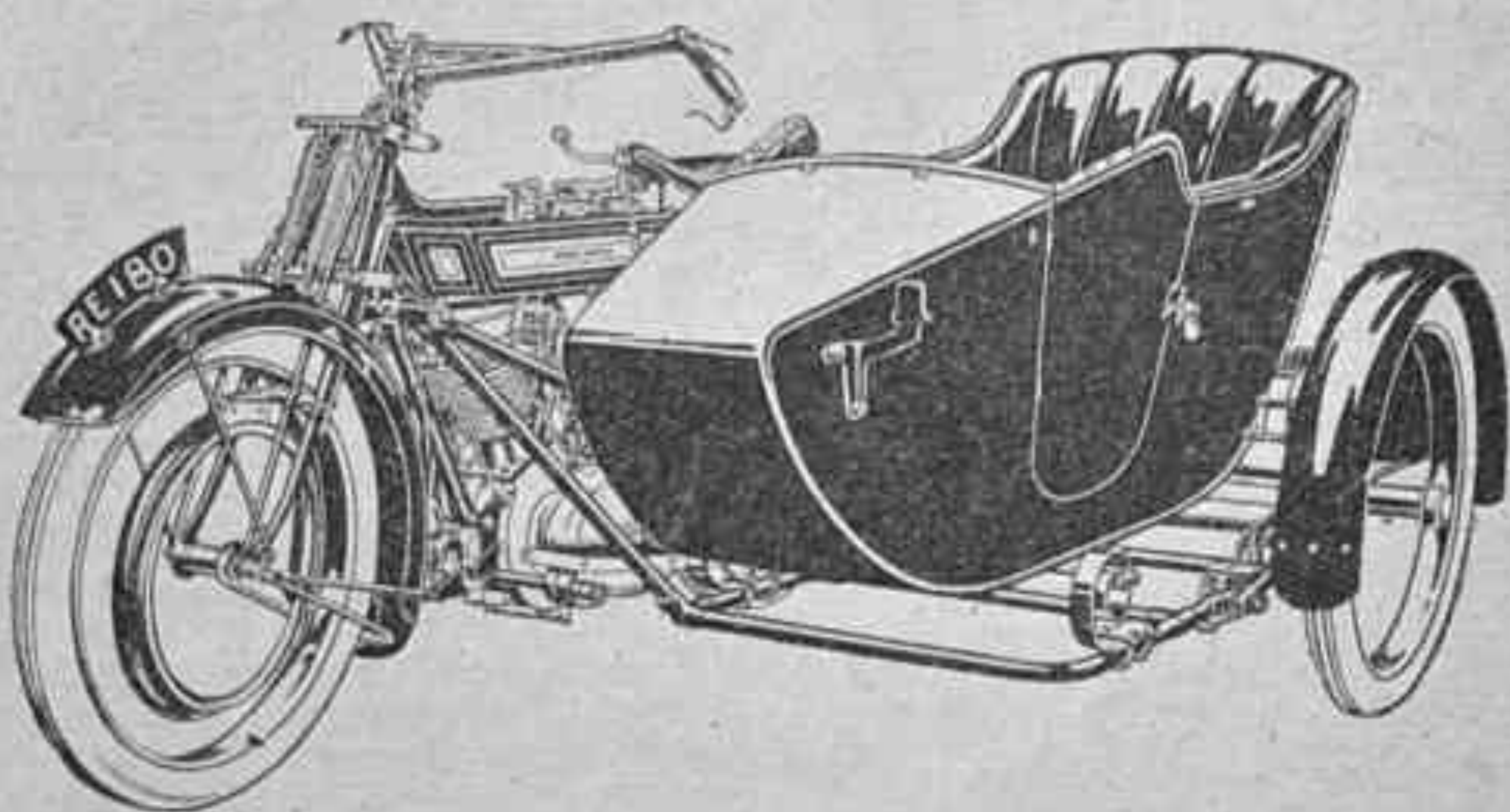
S. Birmingham M.C.C. Open Trial.

THIS club will hold an open reliability trial for motorcycles and passenger machines on Saturday, November 1st. The first competitor will be started promptly at 8.30 a.m. from the Mermaid Hotel, situated at the corner of the Stratford and Warwick roads, Sparkhill, Birmingham. Competitors should be at the start not later than 7.30 a.m. Times will be taken from competitors' own watches to the nearest minute, and there will be non-stop sections on the route. Apparently the South Birmingham Club have decided to give a trial to the suggestion made in the Editorial page of *Motor Cycling* of September 3rd. Therein we discussed puncture penalties, and said, "We contend, however, that providing the competitor has a genuine puncture, and he re-



—and the Louis Clement two-stroke. This illustration shows the rotary valve side.

pairs it in front, or with the approval, of an official, he should be allowed to do so without penalty." The rules for this trial provide for this, and those who puncture tyres may pull up at the nearest official and effect a repair under his observation. For this no marks will be deducted, but extra time will not be allowed. Anyone taking advantage of this allowance for other purposes will be disqualified. The chief awards to be gained are the Palmer Cup, to be held for one year, for the best performance by any machine; the Upton Cup, to be won outright, for the second best performance; the Cooper Cup, to be won outright, for the third best performance; the Cameta Service Cup, to be won outright, for the best performance by a member or ex-member of H.M. Forces; and a silver cup for the winner of the Palmer Cup. Gold medals will also be awarded in different classes. Entries close on Friday, October 24th, and should be forwarded to Mr. S. Kempson Jones, 93, Bright Street, Birmingham.



Appearance

IN finish, no less than in strength and design, the 6 h.p. Royal Enfield Sidecar Combination is of the highest order.

The well-known two shades of green and black, used on the sidecar and tank, the "clean" black handlebars, the high class enamel employed throughout, and the heavily nickel-plated bright parts all contribute to that atmosphere of refinement which surrounds this popular combination.

Appearance in motorcycles may not be everything. We do not suggest it is, but what we do maintain is that such a finish is indicative of the care bestowed on the Royal Enfield Combination throughout its various stages of construction.

We shall be glad to send particulars of our latest models on request.

The ENFIELD CYCLE CO., LTD. ∴ REDDITCH.

And 48, Holborn Viaduct——London, E.C.1.

Tour & Travel



Comments—Critical and Otherwise—on Diverse Matters.

The Devil's Own Conception.

FIRST of all, to discuss the irksomeness of carrying two samples of that conception of Satan, the acetylene generator: It is possible to run sidecar, tail and headlamps off one ordinary generator if burners of economical capacity are fitted to the two larger lamps. Even so, the light does not last for more than an hour, or an hour and a half, on one charge, and frequent indulgence in the necessary business of supplying new carbide is not craved by the most enthusiastic. What we require is a size one generator, capable of accommodation in the average sidecar in addition to the passenger and oil tins, or fitting to the forward connection. It should be just large enough to supply all headlamps for three hours or so, something between our present undersize articles and the big car type. It should not cost very much more to make one of respectable size when on the job, and its sales, we feel sure, would justify possible modifications in plant. At a time when generators of any capacity are rather scarce, except at extortionate figures, perhaps we are asking a lot. How is it that most of the accessory people have plenty of lamps of different sorts and sizes, and yet the business part of the lighting outfit is so hard to obtain?

* * *

Annoying Preliminaries.

ONE of my most frequent grouses when tuning a machine is that the job takes, perhaps, five minutes, but getting at the job and putting everything back again often takes three or four times as long. On several occasions recently I have had occasion to take out my back wheel. It is a matter of only a few minutes to remove the chain, loosen the mudguard, and undo the spindle nuts. The "but" in this case is the rear band brake, which looks capable of being taken out of the way in a moment or two, but is not. When the band is tightly adjusted, two nuts (one a "lock") have to be unscrewed over a thread of about one and a half inches. The thread is tight, and, owing to the position of the nuts, they can only be unscrewed one-sixth of a turn at a time. My back always aches and my knuckles are usually barked after undertaking this job, and I make a vow to ease the thread—but never do. This is only one of the many examples I have struck this season. Another belonging to this class is the tightening and refitting of loose mudguards, which more often than not necessitate the removal of the wheel.

Minute Troubles.

FOR a fortnight recently I was troubled owing to oil only travelling through my drip-feed lubricator at a speed guaranteed to seize the engine after 20 miles. Sometimes it was possible to force a quantity into the crankcase by lugging with might and main on the pump plunger, and occasionally the lubricator would work quite satisfactorily. Having taken the mechanism to pieces and found all passages clear, I came to the conclusion that the disinclination to flow was due to my using a thicker oil than is my wont, added to the fact that the weather was unusually cold. The use of a thinner oil made no difference, so after another week I again dismantled the lubricator, and found two small hairs, total volume little bigger than a pin's head, sitting comfortably on the baby ball and spring valve. 'Tis the little things in life which often cause the most trouble.

* * *

War-time Finish.

WE got rather accustomed during the war to seeing articles labelled "War-time finish," all superficial work being omitted. Machine tools, motorcycles, and many other engineering products in particular were sometimes so labelled. Much of this still seems to be done on principle, although the labels stating the fact are not now often seen. A very keen amateur rider who has the money to indulge his fancies is just taking delivery of his third outfit this year. The two he has already owned bear famous names, but the lack of finish has been too much for him and he has sold them, not at a huge profit be it said. In one case considerable slackness developed in the valve guides and tappet guides after a mileage which could not have been more than 400 or 500. Nipples on oil and petrol pipes coming adrift, threads on bolts and studs which stripped after removing the nut once or twice, were some of his troubles. In another case the coned joint between carburetter float chamber and throttle barrel could not be made petrol tight under any conditions. The third machine for which this keen rider is now waiting has a reputation for excellent finish, but it is not considered fast or exceptionally powerful, and the order has been placed solely on the reputation for good finish. Some manufacturers may find a moral in this little tale—"anything that is worth doing is worth doing well" suggests itself, or "all is not gold that glitters."

Tour and Travel (contd.).

The Dangers of "Three Up."

WHILE a great deal is heard anent the evils of carrying silk hosiery and jumpers on the carriers of solo machines, very little is said concerning the same sort of soft goods transported on the carrier of a sidecar machine. Now a "wobbly" passenger is just as trying on the back of a properly lined-up outfit and the difficulty of keeping the sidecar wheel down when it is necessary to have the heavier passenger on the carrier is known to all who are in the habit of taking an occasional third. For this reason (and others) one's best girl's eldest brother is seldom asked to take the air with his devoted sister. The element of danger is a far more serious item under these circumstances than is the case even when the passenger on a solo machine is heavier than the driver, though this arrangement is ever to be avoided where possible. At Mitcham the other Saturday a Douglas rider lost his head and charged into a heavy combination slowly emerging from a side road. Although his front wheel only just touched the front wheel of the sidecar outfit, the whole thing turned over. Fortunately nobody was hurt. Had the combination been a solo machine with a passenger, it is doubtful whether the passenger would even have had to leave the carrier. An empty sidecar is easier to manage at speed than is the same turnout with three up, and anybody who observes will notice that two sidecar combinations out of three of those that get into trouble are carrying an extra somebody behind the pilot.

* * *

The Motorcycle and Dress.

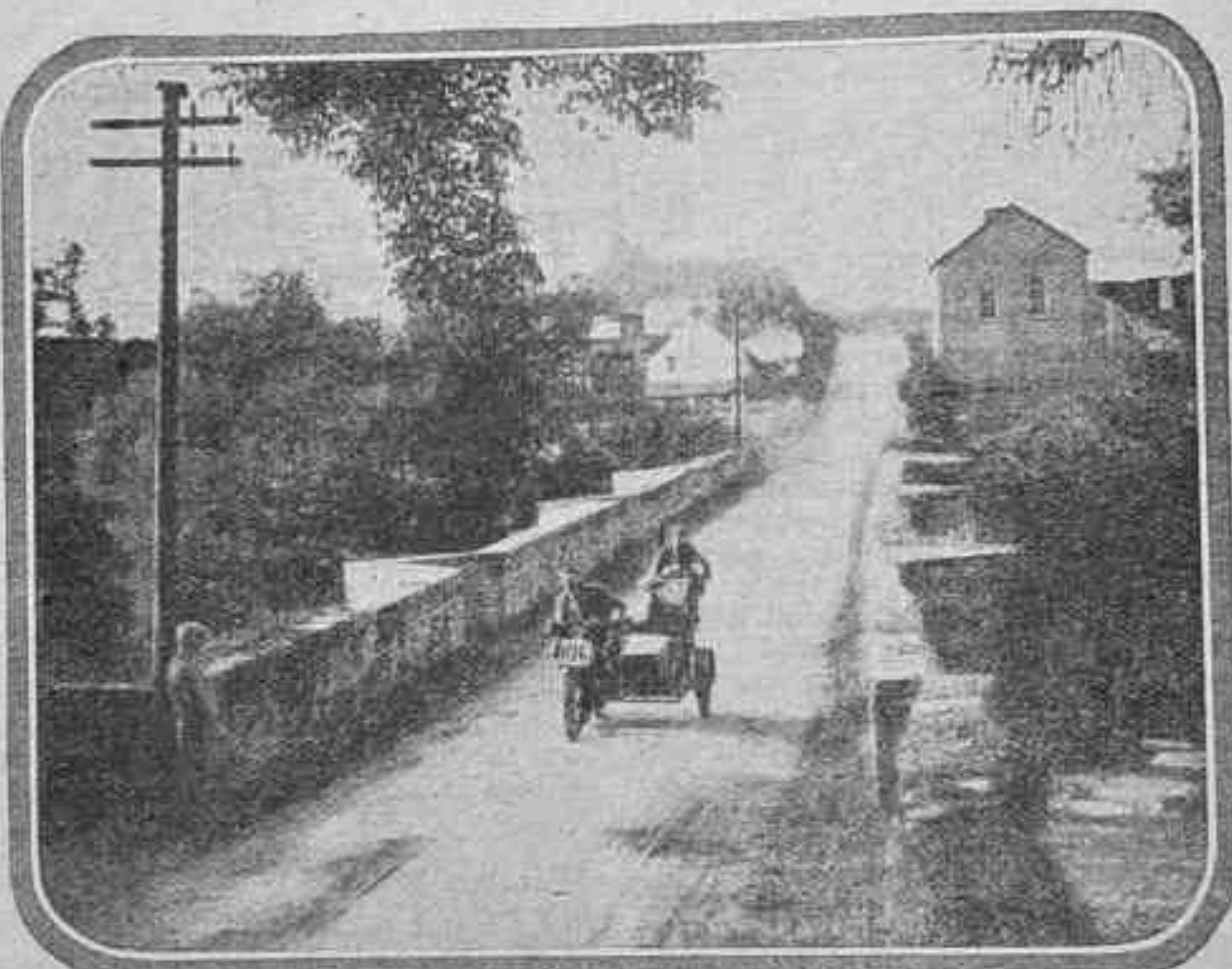
IT is rather to be wondered at that grey flannel trousers are not more popular for motor cycling than they are at present. A goodly number of riders have adopted them, but a good many of these are thus attired because they are on the way to other sports where flannel "bags" are expected. Despite times of extortion and profiteering, a pair good enough for the road can be purchased for 25s. or 30s., which sum compares very favourably with amounts charged for the ill-fitting and impossible riding breeches affected by some of the tough-skinned in London and other busy cities. Certain of the samples seen on the road would make the average gee-gee weep, and the tailors responsible would be lucky to escape with their lives if they attempted to supply such garments to the sons of the land. The flannels do not show the dust, are easily brushed, and if stained with oil can be cleaned with ammonia when they are washed. Further, if kept in the press or ironed occasionally, they always look decently civilized at the end of the journey and can be worn with any pattern of suiting, being especially adapted to a sports coat.

* * *

Does Your Speedometer Work?

HAVE you noticed the number of speedometers that have gone out of business just lately? Whether or no there is an epidemic breaking out in our-flattering fib machines is a mystery, but the fact remains positive and incontrovertible that at least one in five give a correct reading only when the machine is at rest. This, of course, might be said of a great many new instruments incidentally. In conversation with a man who sells these things I was told that the appalling state of the roads round London had a good deal to do with it, contributed to by the laying up of many machines for four seasons, during which time the lubricant in the shaft casing either evaporated or effervesced, or whatever lubricants do when they are fed up with life, and when the happy owner went round his bus with the oil-can he took not the slightest notice of the overworked flexible shaft. The result is that now all the better-known repairers are full up with work and some wights in their innocent optimism have even taken to writing to the makers for spare parts! Speedometers have been treated as a separate item too long, and it is time that they were all incorporated in the design of every machine as in car practice. The Yanks gave us a lead in this direction in 1914, and it is a great pity that our over-conservative makers have not followed it. Everybody wants a speedometer nowadays, and with the overwhelming reluctance on the part of local fitters to fit, it is reasonable to suppose that 60 per cent. of the firm's customers have to spend a hot afternoon on hands and knees 'mongst log tables and protractors trying to persuade the larger pinion that a circle is equi distant at every point from its centre. Now one man doing nothing else all day, or a machine for that matter, could be relied upon to place the cause of all the trouble in position with a precision calculated to bring a smile upon the countenance of Euclid himself, and the cost ought not to be very terrible.

Tourist.



A picturesque bridge near Brecon in South Wales.

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MAKES THE NEW 3 H.P.

ABC

A TWO-WHEELED CAR

Perfectly balanced, **controllable**, aircraft type of engine, with detachable heads and overhead valves.

Rigid **unit** construction of engine, clutch, four-speed gear-box and bevel drive.

Proper **attachment** of that unit, by four bolts, to the frame.

Excellent **suspension** front and rear, by long leaf springs, with perfect lateral rigidity.

Adequate **protection** of rider and mechanism from the weather. Good road clearance.

Sound **braking** system—internal expanding brakes (fully enclosed) on both wheels.

Wonderfully **stable**, owing to low centre of gravity on all road surfaces.

Quietness, comfort, dignity, efficiency, and light weight.

PRICE £85

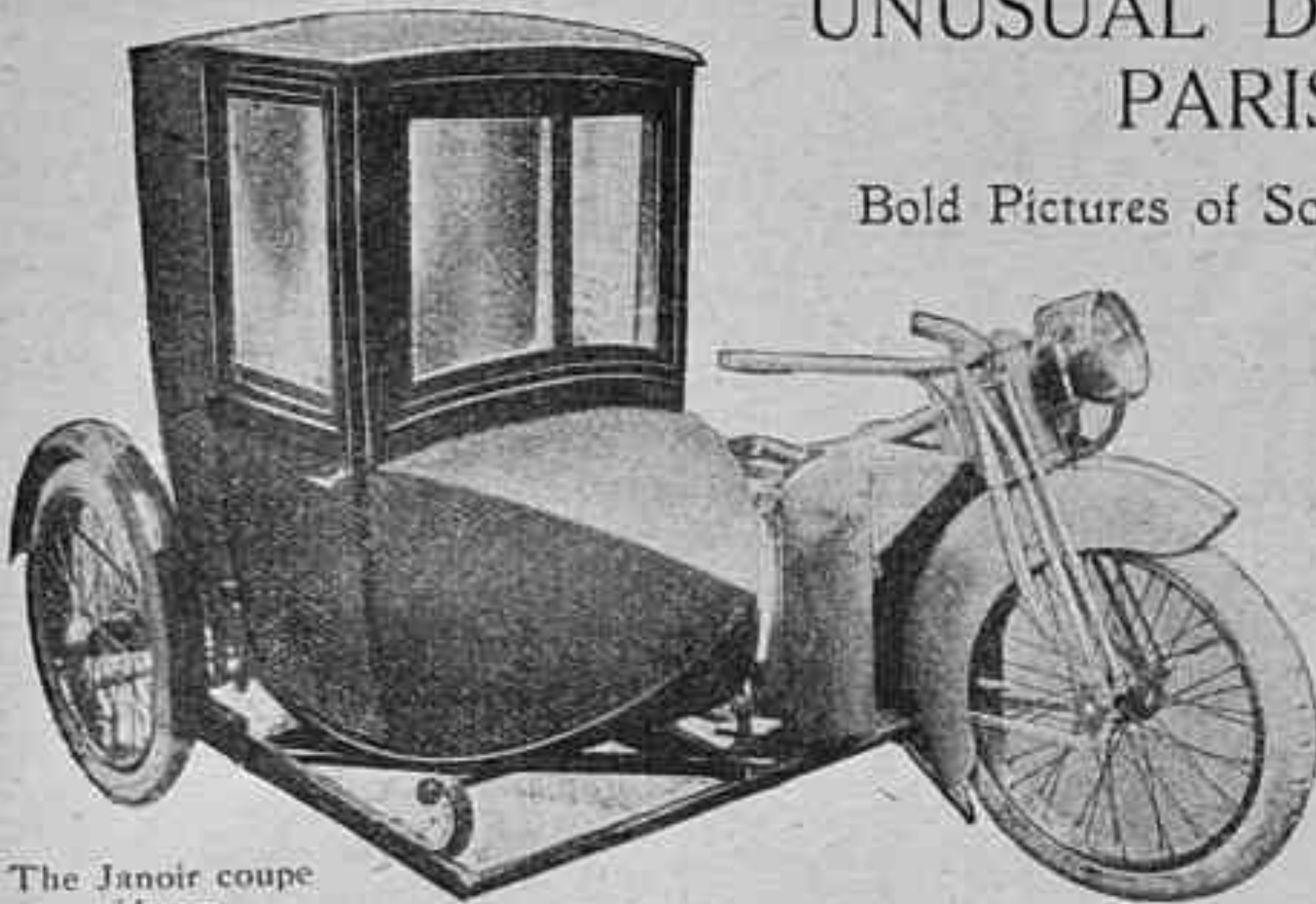
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UNUSUAL DESIGNS AT THE PARIS SHOW.

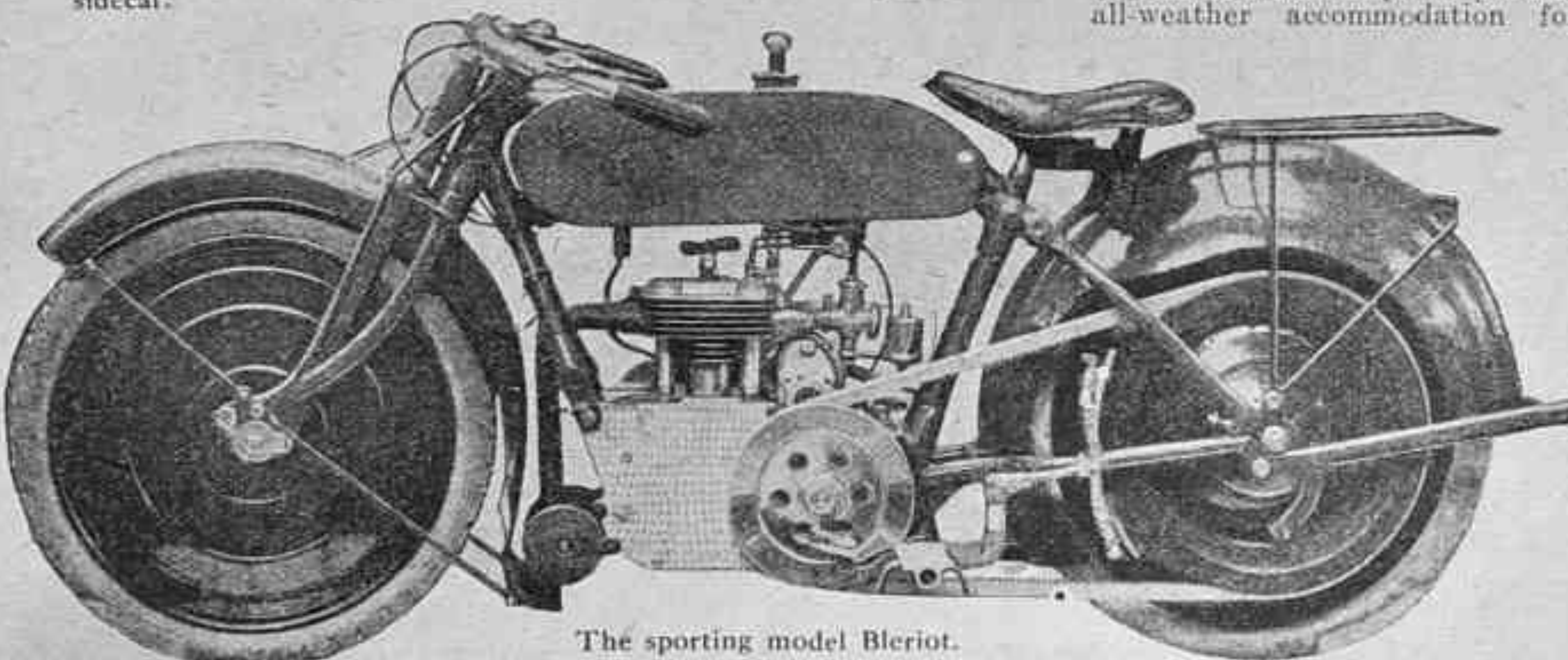
Bold Pictures of Some of the More Striking.



The Janoir coupe sidecar.

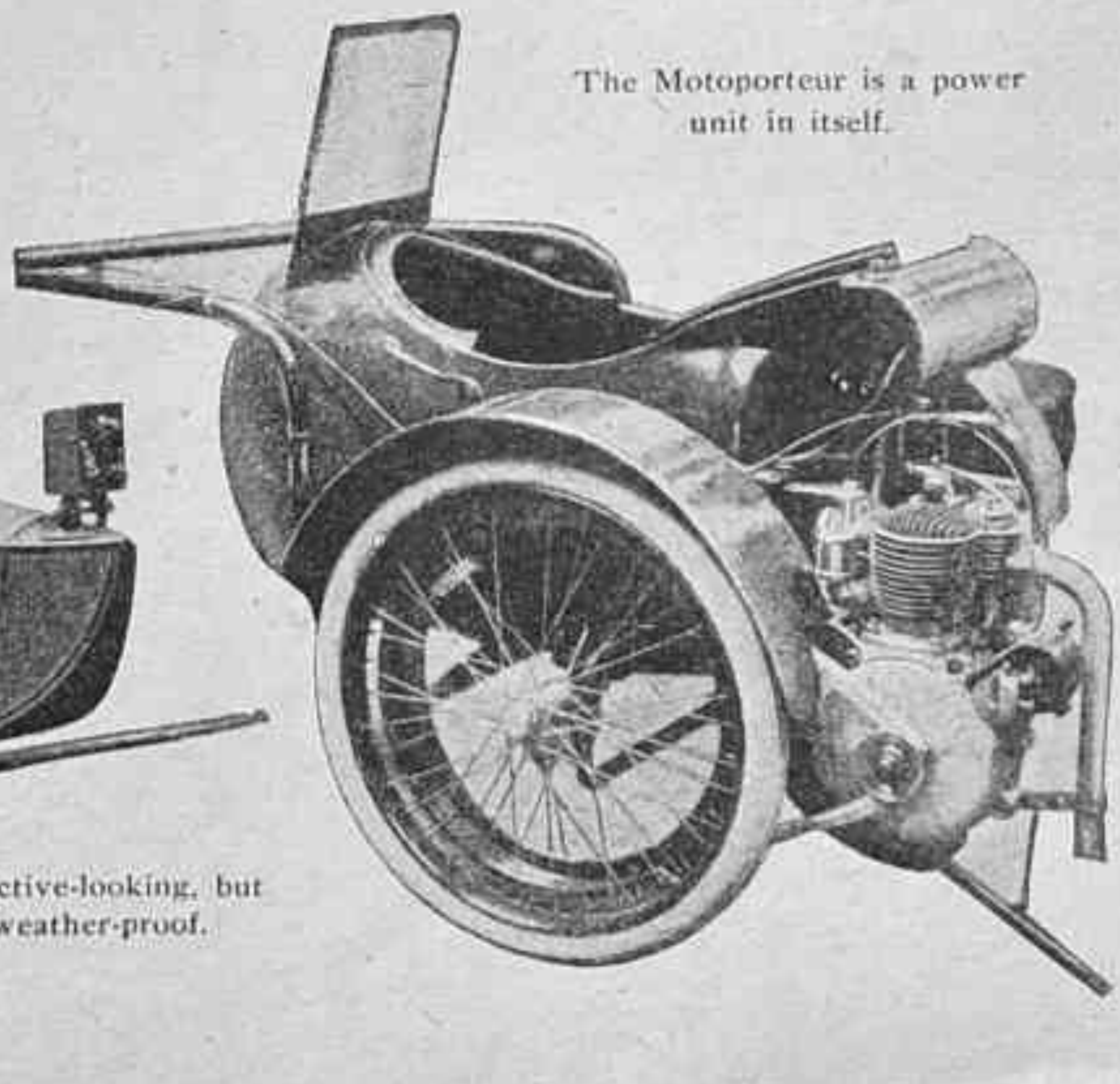
THE distinctive lines along which some French motorcycle manufacturers are proceeding will be obvious from the photographs given on this page and the following one.

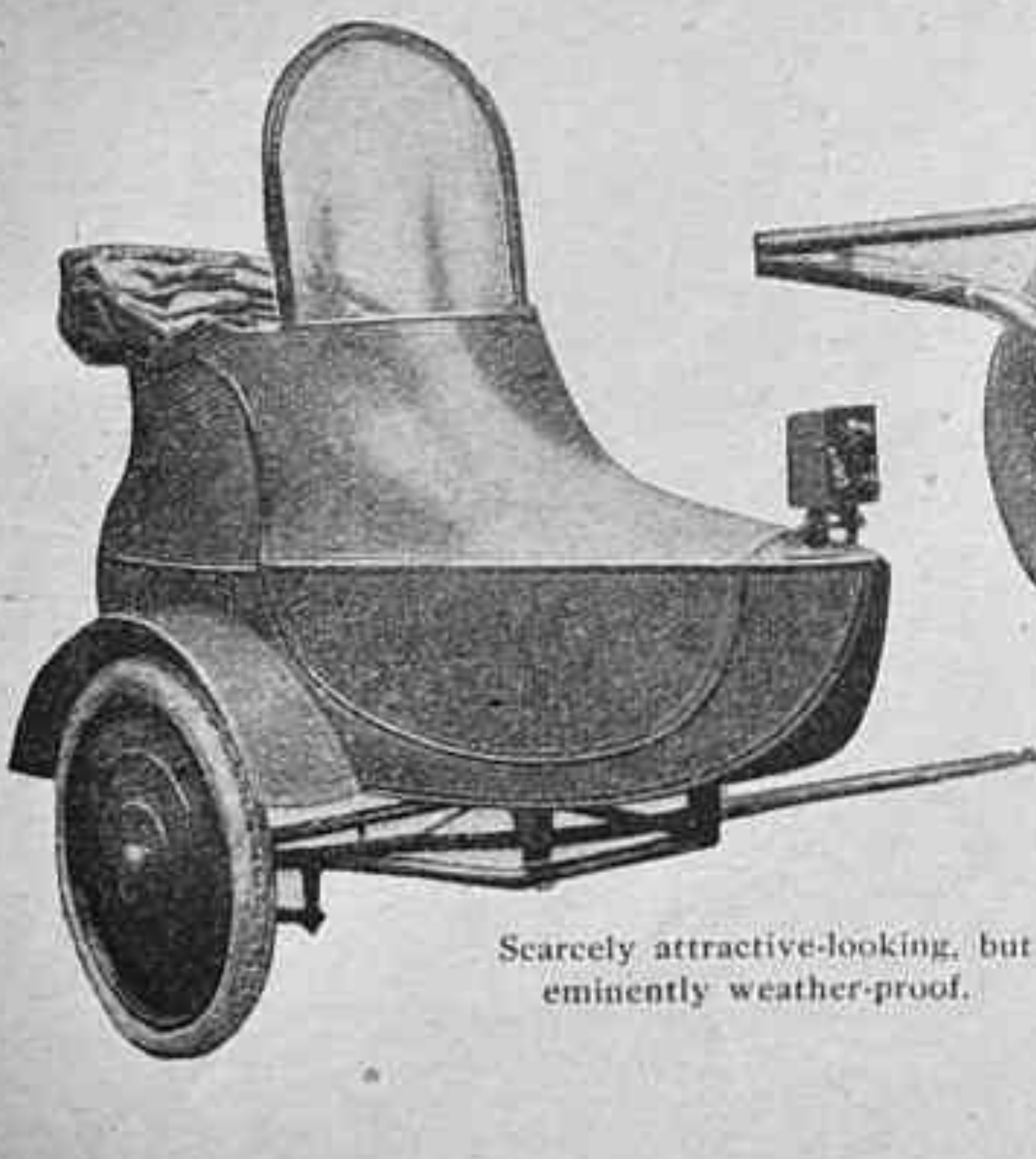
The Janoir machine was described in our last issue, and it will be remembered that it has a large horizontally-opposed air-cooled engine incorporated with a gearbox which drives the rear wheel by chain. Both the front and rear of the machine are sprung, and it is intended for heavy passenger work. The coupé sidecar is an attempt to provide all-weather accommodation for



The sporting model Bleriot.

The Motoporteur is a power unit in itself.





Scarcely attractive-looking, but eminently weather-proof.

Unusual Design (contd.).

the passenger on this machine. In the other photograph of the Janoir is shown an arrangement for tandem seating on the machine itself.

The sporting model Bleriot is of solid construction, but is not unduly heavy. This is provided with a two-cylinder vertical air-cooled engine which drives through two speeds and a clutch to the rear wheel by belt. The mounting of the rear brakes and the large size of the countershaft pulley will be apparent. The distinctively shaped sidecar with taximeter is intended for attaching to the Bleriot.

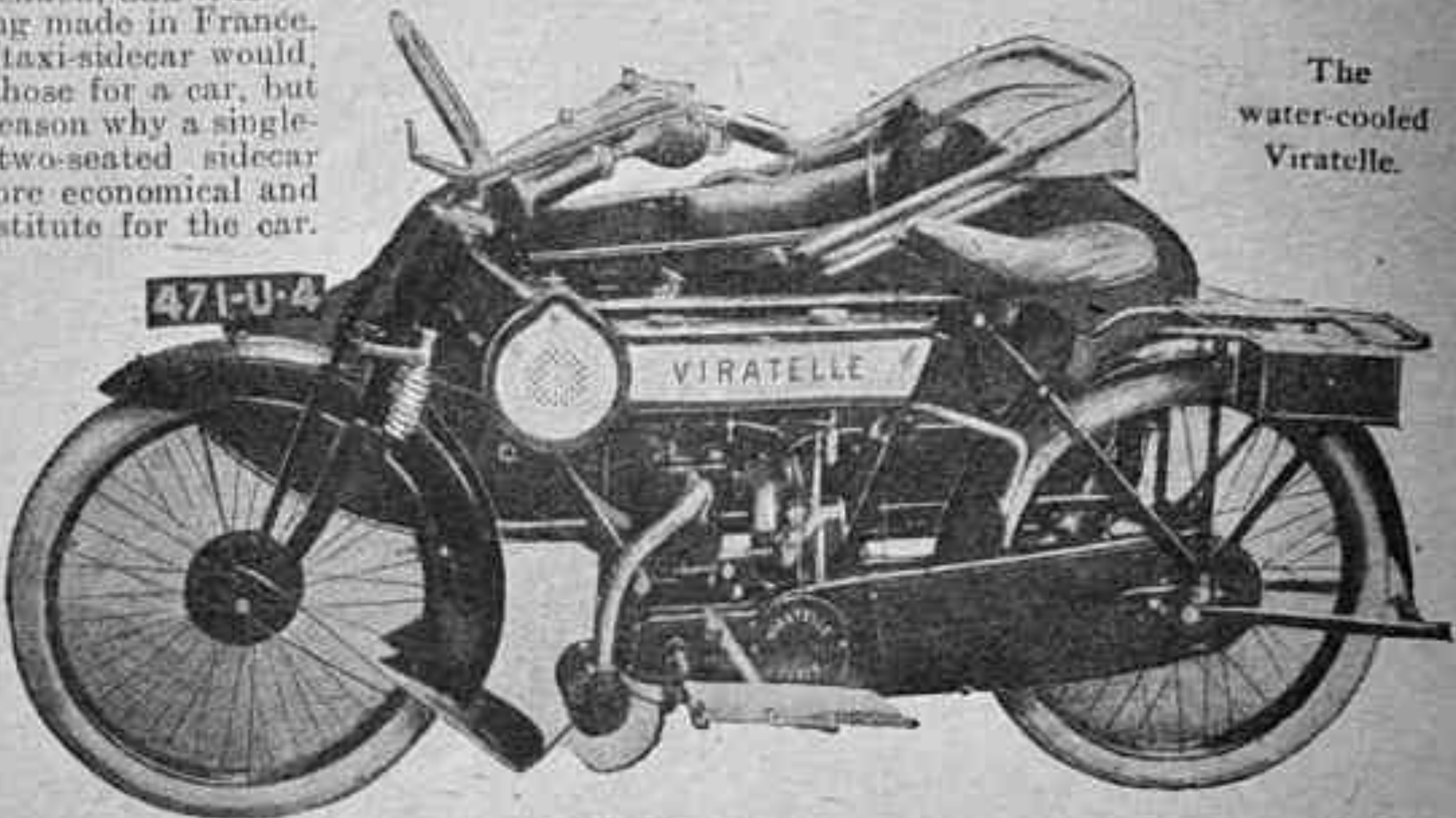
The taxi-sidecar has been suggested as a solution of present troubles in London, and it is obvious that a similar attempt is being made in France. The rates charged for a taxi-sidecar would, of course, be less than those for a car, but there appears to be no reason why a single-seated or possibly a two-seated sidecar should not provide a more economical and equally satisfactory substitute for the car. The bore of the engine, which is of the two-cylinder vertical type, is 60 mm. and the stroke is 88 mm., giving a capacity of 500 c.c. Two models are made, the chief difference being that the more expensive model has a spring frame.

The Motoporteur is for attaching to ordinary bicycles to form a passenger power-driven unit. It has a 4 h.p. Anzani engine mounted at the rear of the sidecar body. The engine drives by belt to the sidecar wheel, the petrol tanks and subsidiary gear being carried at the rear of the sidecar.

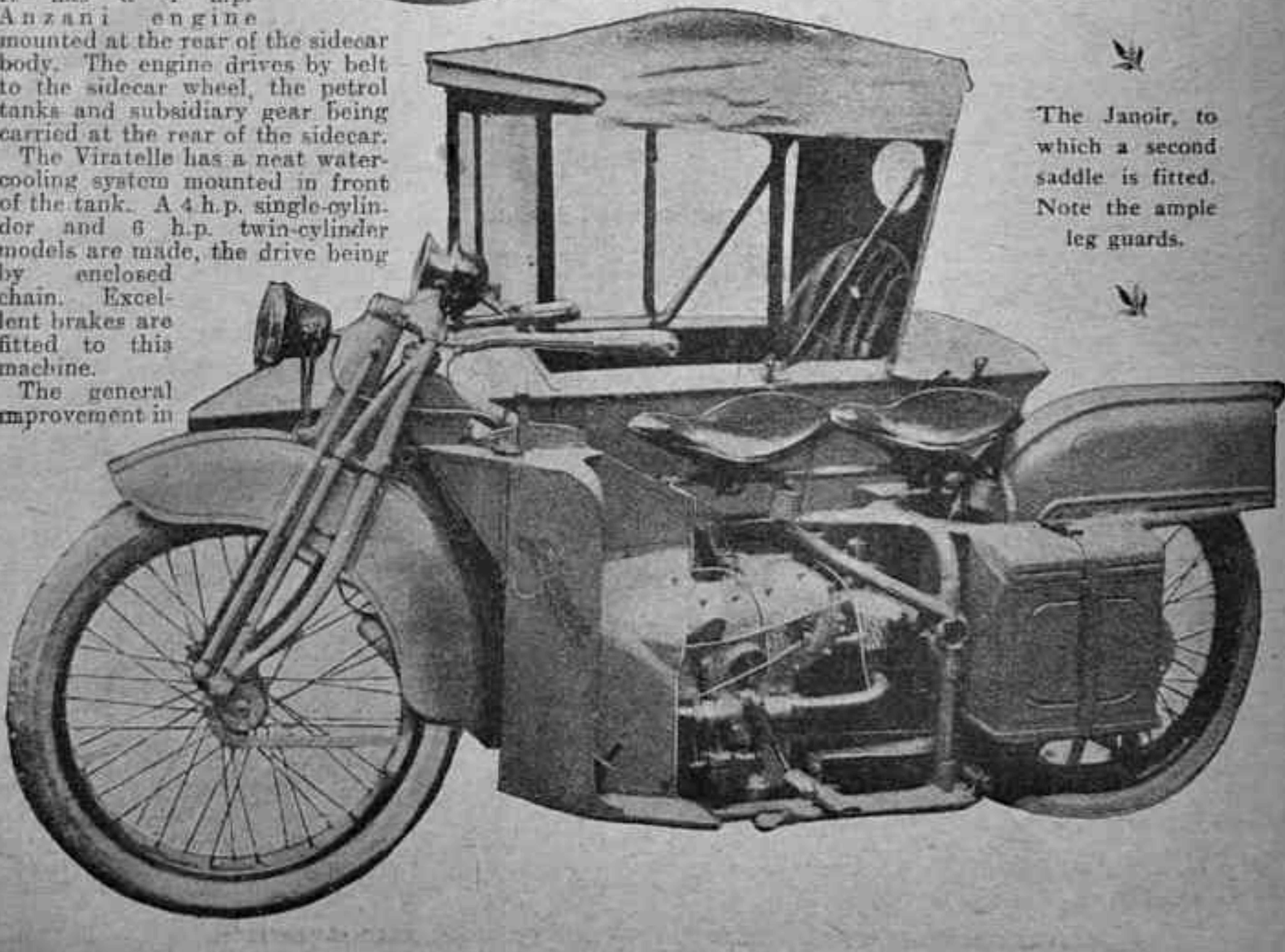
The Viratelle has a neat water-cooling system mounted in front of the tank. A 4 h.p. single-cylinder and 6 h.p. twin-cylinder models are made, the drive being by enclosed chain. Excellent brakes are fitted to this machine.

The general improvement in the construction and design of French machines is one of the most striking features of this year's Salon. In the past the French machine was a comparatively lightly built vehicle, but the general deterioration which has taken place in the French roads has caused the French manufacturers to construct more sturdy frames and give a generally more solid appearance to the machines. The sporting type of machine appears to be becoming more popular. What is known over here as a T.T. model is referred to in France as the "Type Sport."

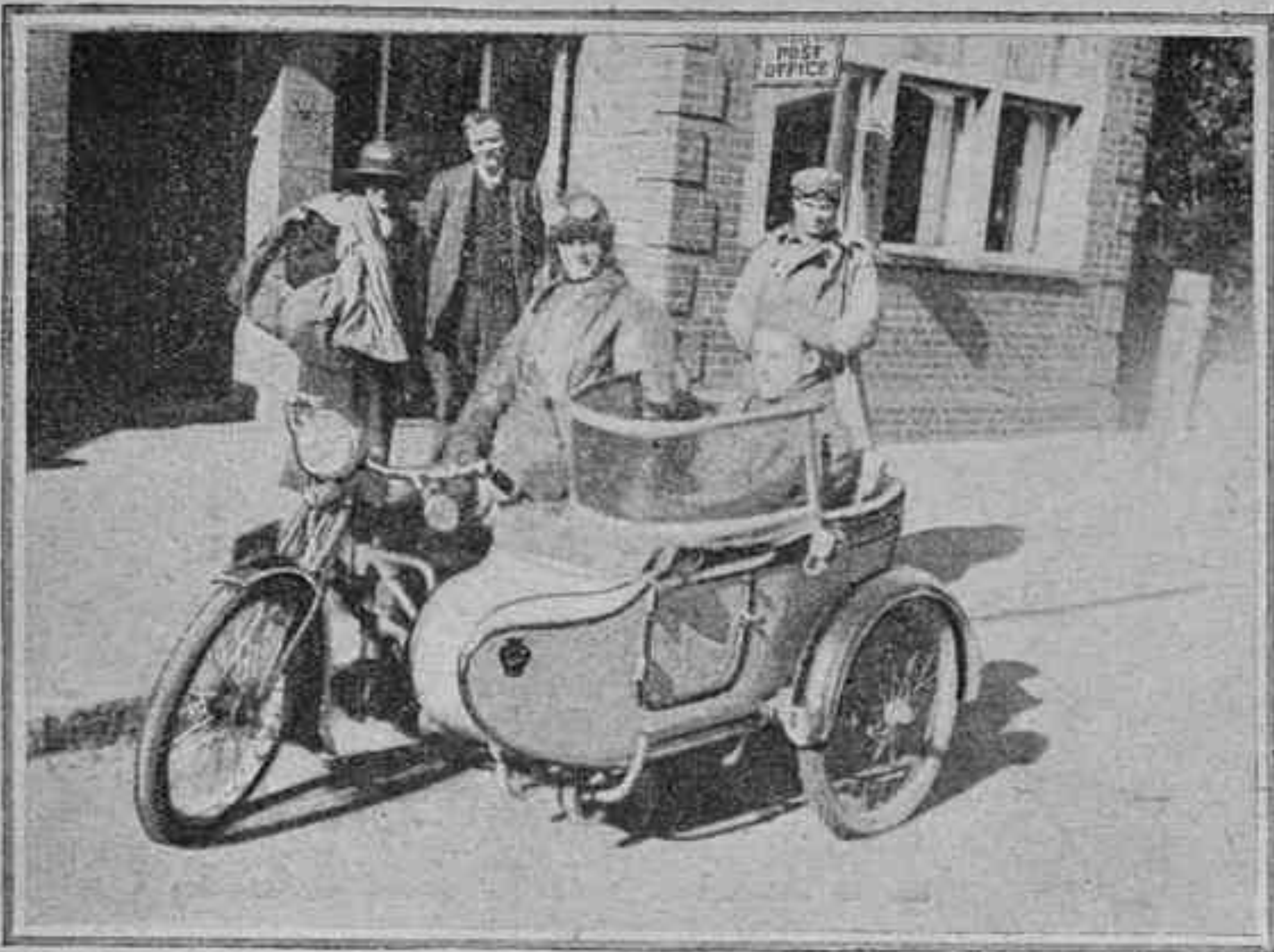
The automatic carburetter is also making its appearance for motorcycles, the Zenith being fitted to several of the makes exhibited. This is described elsewhere in this issue.



The water-cooled Viratelle.



The Janoir, to which a second saddle is fitted. Note the ample leg guards.



An A.A. Member Carrying H.M. Mails

Be Prepared!

A Motoring Moral from the Great Strike.

Preparedness, efficient organization and the willing help of motorists saved the situation during Great Britain's recent "black week."

Food, milk, petrol and mails—all necessary to the life, health, convenience and business of the nation—the transport of which had previously been looked upon as a railway monopoly, were carried throughout the length and breadth of the land by means of the internal-combustion engine. Luxurious limousines, commercial vehicles, touring cars, motorcycle combinations, even solo machines co-operated in this great work and enabled the country to carry on during a situation which it was anticipated would drive the community to starvation within a week.

The Automobile Association played a prominent part in the struggle, and its plans, which had been prepared some months previously at the request of the Home Office and Ministry of Food, were faithfully carried out by many thousands of willing members. The motorist was the man of the moment—he was called upon to perform a huge, an unprecedented task and he "delivered the goods."

So much for the story, now for the moral.

The individual motorist, as well as the State, must be ready for emergencies, and in order to be fully prepared he must not rely on fighting a lone hand but call to his aid the efficient organization and willing assistance of the Automobile Association, which for more than 15 years has led the way in providing road service for motorists.

This service includes the assistance of *khaki-clad* A.A. Patrols, Mechanical First-aid Motorcycles, Roadside Telephones (available to all members by day and night), Free Legal Defence and Advice, Home and Foreign Touring Facilities, Engineering Assistance, Officially Appointed Hotels, A.A. Agents and Repairers, Special Insurance Facilities, Encouragement of Home-produced Motor Fuel, etc., etc. By means of this service a member is looked after the whole time he is on the road, and he is prepared for such emergencies as breakdowns, delays, bad road conditions, unsatisfactory hotel accommodation, incompetent repairers, and many other trials and tribulations.

Therefore, if you are not already a member of the Automobile Association, do not delay longer but JOIN NOW. Subscriptions run for 12 months from date of joining, and you will be able to enjoy the freedom of the road whilst motoring in safety and comfort.

Using a car without the A.A. Badge is a motoring risk.

Full particulars of all A.A. benefits are contained in the booklet, "The Key to the Open Road," a copy of which can be obtained, post free, from the Secretary, The Automobile Association, 3, Fanum House, Whitcomb Street, London, W.C.2.

Motorists in London are invited to call at Headquarters, where a staff of experts is always in attendance to give information on any question relating to motoring.

If unable to call, send a postcard to-day, and the booklet will be despatched by return of post.

HUTCHI

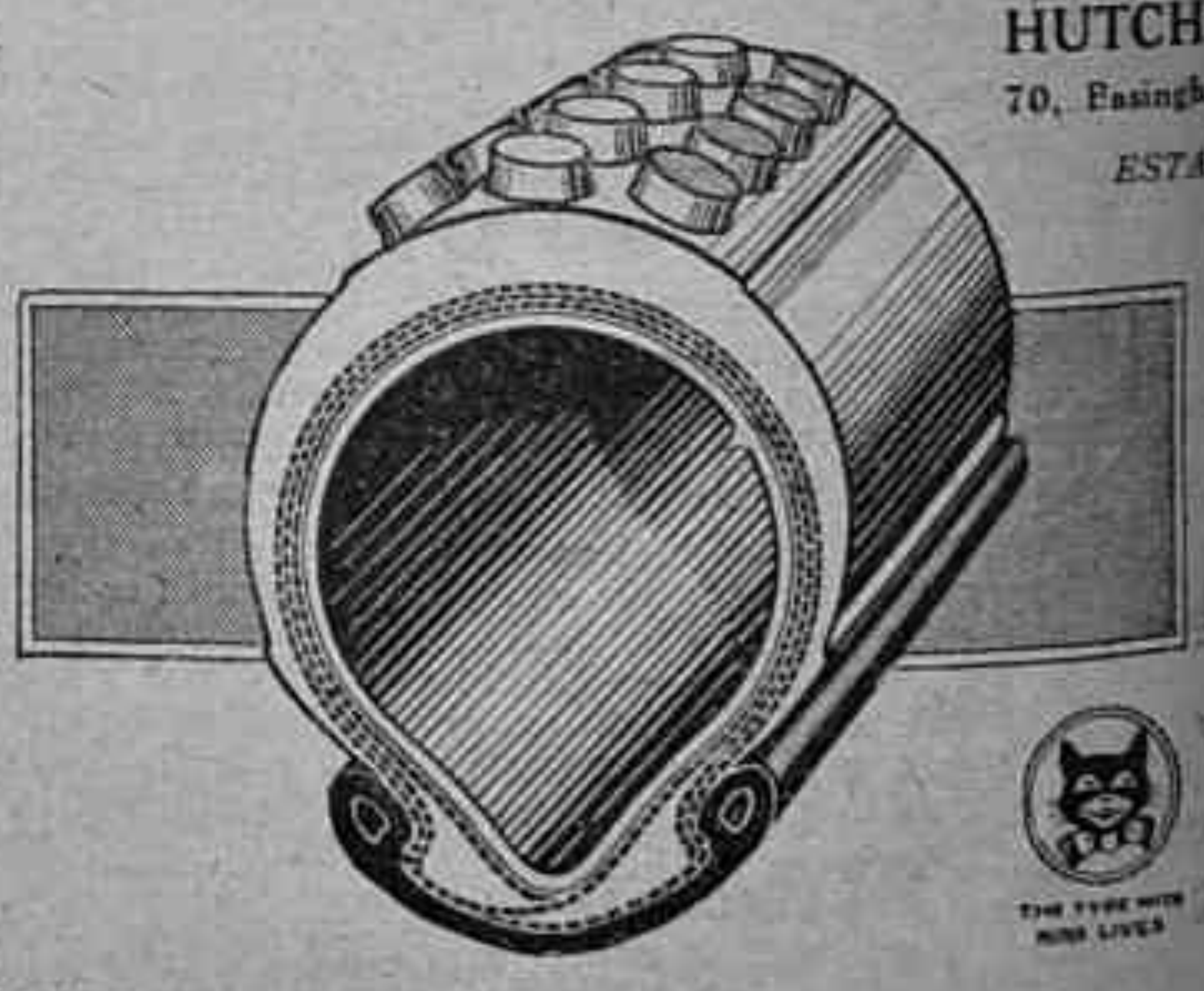
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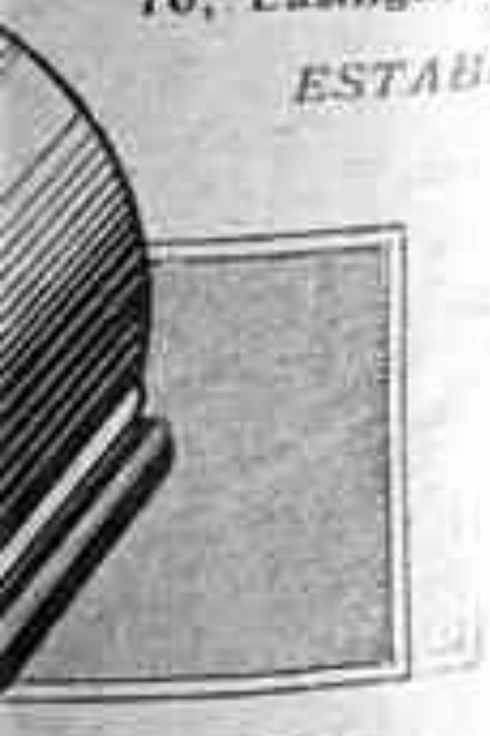
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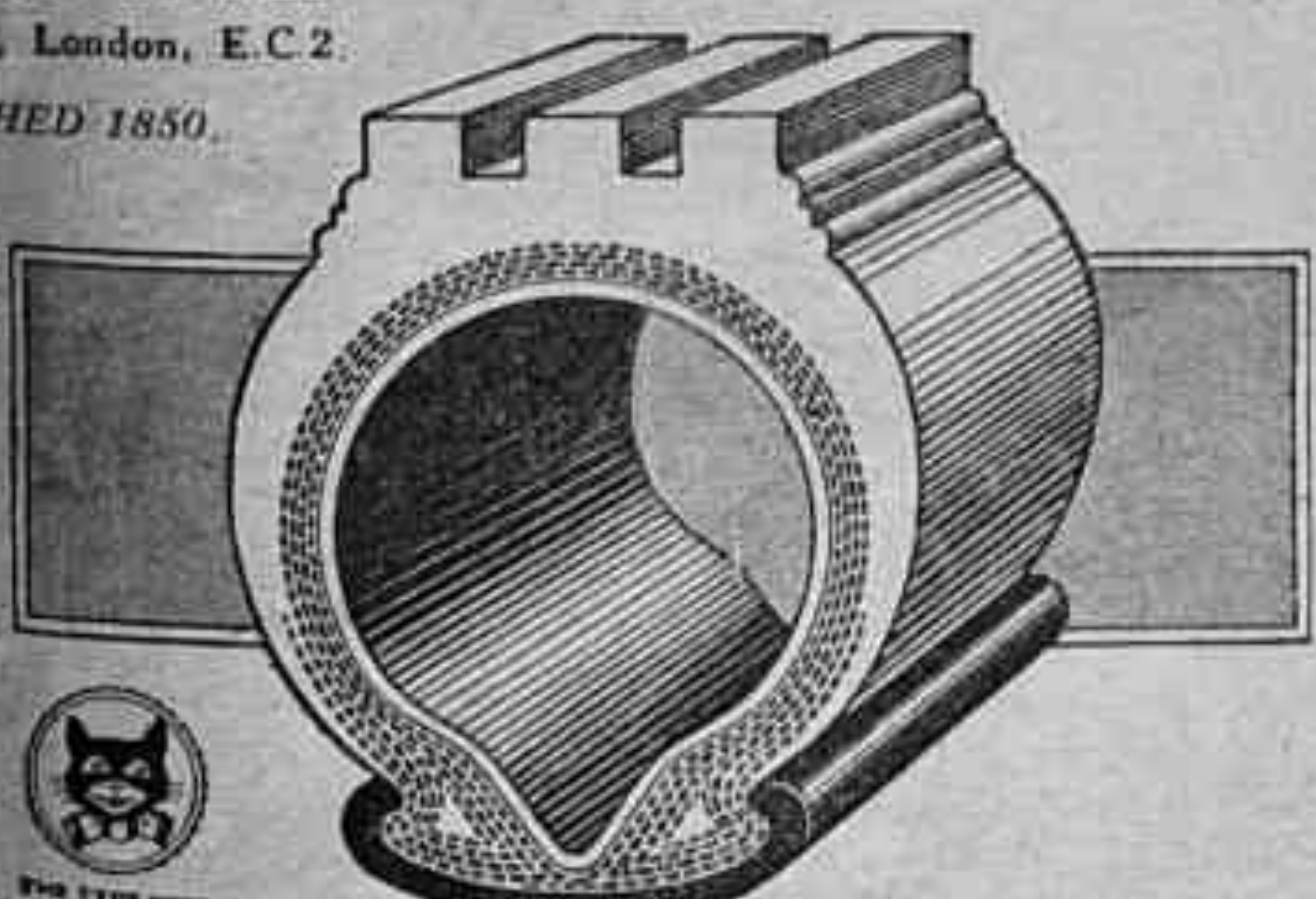
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THE TYRE WITH NINE LIVES

THE TYRE WITH NINE LIVES



Mr. A. W. Torkington (chairman of the A.-C.U.), as seen by our cartoonist at the Welcome Home given to Birmingham motorcyclists.



The plaque which was presented to each guest.



Mr. C. A. Hyde (of B.S.A. fame), who joined with Mr. Torkington in emphasizing the need for tackling reconstruction work with vigour

"WELCOME HOME" TO BIRMINGHAM MOTORCYCLISTS.

A Highly Successful Function.

On Friday evening last 200 Birmingham and district motorcyclists who had served with the Colours were the guests at a dinner and smoking concert held at the Grand Hotel, Birmingham, organized by a committee of gentlemen who as friends of the pastime desired to extend a welcome to returned motorcyclists. The president, Colonel Sir William Bowater, after personally receiving all the guests, took the chair at 6.30. The two toasts during the dinner were "The King" and "Fallen Comrades," both proposed by the president. At the conclusion of the dinner each guest was presented with a bronze plaque representing the figure of Victory crowning the city coat of arms with laurels, suitably inscribed.

Following the dinner an excellent musical programme was rendered by well-known artists, including Jack Lane and George Mozart. Sir William Bowater, in proposing the toasts of the evening, made it quite evident that he knew motorcyclists, and occasioned considerable laughter by his witticisms. Responses were made by Frank Hathard on behalf of the Navy, Major Wilson, of Precision fame (Army), Capt. Josephs (Air Force), and Howard Lane (R.E. Despatch Riders).

Later in the evening Mr. A. W. Torkington, chairman of the A.-C.U., and Mr. Hyde, of the Cycle and Motor Cycle Manufacturers and Traders' Union, spoke and called attention to the need for vigour in reconstruction work equal to that shown on the field of battle.

Congratulations are due to the committee and to Mr. R. H. Henderson, the organizing secretary, for the great success of the evening.



Major Wilson (Precisions), who responded on behalf of the Army.

Sir William Bowater, who presided.

Mr. E. H. Humphries (of Humphries and Dawes), who largely assisted in the organizing.

MOTOR CYCLING

The Original Motor Cycling Journal. Founded in 1902., New Series Commenced 1909.

Written, Edited and Illustrated by a Staff of Practical Motor Cyclists.

Conducted by EDMUND DANGERFIELD.

Proprietors—TEMPLE PRESS LTD., 7-15, ROSEBERY AVENUE, LONDON, E.C.1.

Why Prices Will Increase—

ON many occasions during the past season we have referred at length to the rising prices of motorcycles and the reason therefor, and we regret to have to give it as our opinion that the maximum figure has by no means been reached. In another paragraph we give rough figures indicating our idea of the prices which will be asked for machines offered for sale at Olympia, or at any rate what may be the delivery prices next year. As these prices are higher than any ruling to-day, we feel we ought to put forward the reasons why we think such increases are inevitable. In the first place, labour is receiving anything from 100 to 200 per cent. increase in wages. It must be borne in mind that labour includes many workers who are not actually employed at the motorcycle factories. The term embraces men engaged upon such work as the manufacture of sheet metal, castings, enamel, ball bearings, chains, and many other items which have to be obtained by the manufacturer before his machine can be assembled. There is also the lamentable fact that in many cases production per man is considerably less than it was in 1914. It is only right that labour should receive a larger share of the benefits derived from their efforts than it used to do, but there are economic limits beyond which we cannot go. We should be sorry to see our workmen endeavouring to force impossible demands, which would only result in ruin, at the worst, or the handicapping of the motorcycle industry so seriously that we should be unable to compete with foreign manufacturers, at the best. As an instance of the manner in which the decreased production of any part—no matter how trivial—affects the final output of machines, we will quote an example, which is not by any means an isolated one. Take the case of the manufacturer who was completing about 20 machines per week, and was unable to obtain magneto chains. It is thus possible for an item costing only a shilling or two completely to hold up production. Strikes again do not tend to help matters. The railway strike, although of short duration, had its effects, but a still greater menace is that of the ironfounders' strike, which, at the time of writing, is still in force. During such periods production falls to a minimum. Motorcycle manufacturers have done their best to carry on during such strikes, although they were losing financially in keeping on their own work-people, for many of whom no job could be found. No sane person can expect a commercial house to act in a philanthropic manner, and thus the larger part of the financial loss occasioned must eventually be borne by the buying public.

—To Unheard of Figures.

WE all know that practically every ordinary commodity costs 100 per cent. more than it did in pre-war days. The Government estimate the increased cost at something over 110 per cent. In other words, we have to pay two guineas to-day for articles which previously cost £1. This being the case, we are afraid that the prices quoted for motorcycles, which have not increased to the same extent as other articles, will rise still more. Take the case of a popular 2¾ h.p. machine which used to cost £48; had the price of the motorcycle increased in proportion to the decreased value of money, to-day's cost should be £100 16s. Motorcyclists generally do not realize that the present-day prices of motorcycles are really *comparatively* low, and although we are afraid we shall be taken to book for making the statement, a good 6 h.p. combination at £160 is in reality a bargain. Consider the anomaly of paying £160 for a new combination, using it for a few months, and then selling it for £185. Such practices are fairly common, and the second-hand market is a true indication of the value of money to-day. As a warning to those of our readers who are postponing the purchase of a machine in the hope that 1920 prices will be lower, we are giving a forecast of the prices which may be asked for standard outfits next year. These figures have been deduced after a great deal of thought and many discussions with the manufacturers. First-class 6 h.p. or 8 h.p. sidecar outfits may be anything from £190 to £230. The best 3½-4 h.p. solo machines may cost anything from £95 to £135. We have quoted maximum and minimum prices, but are afraid that the higher figure is likely to be nearer the mark. After next year prices are not likely to fall to any extent, until the following conditions are fulfilled:—We must have no more strikes; there must be a great deal more co-operation between the worker and the employer, for the mutual benefit of all; further steps will have to be taken towards standardization; these three will result in mass production, which, after all, is the alpha and omega of cheapness. As an aid to mass production, which, as we have shown, is practically the only means left of reducing the price of the individual machine, we suggest that manufacturers, who we happen to know regret high prices quite as much as the consumer, pay more attention to overseas markets. By stimulating business abroad the manufacturer will be taking a leaf out of the book of his American rivals, who are an example to the world of what judicious propaganda can do in the way of increasing business.

THE PRACTICAL PAGE.

Devices by Means of Which You Can Obtain More Enjoyment from Your Machine.

Contributions to this page are invited. A "Motor Cycling" Ten Shilling Note franking the purchase of goods to this value from any advertiser in our pages, is forwarded to the sender of every description which is utilized.

Improving the Oil-feed.

MANY users of the Best and Lloyd semi-automatic lubricator will, at times, have discovered how difficult it is to see the oil drip, while on bumpy roads the oil gets thrown on to the sides of the glass. I overcame this difficulty in a very simple way. Remove the spindle



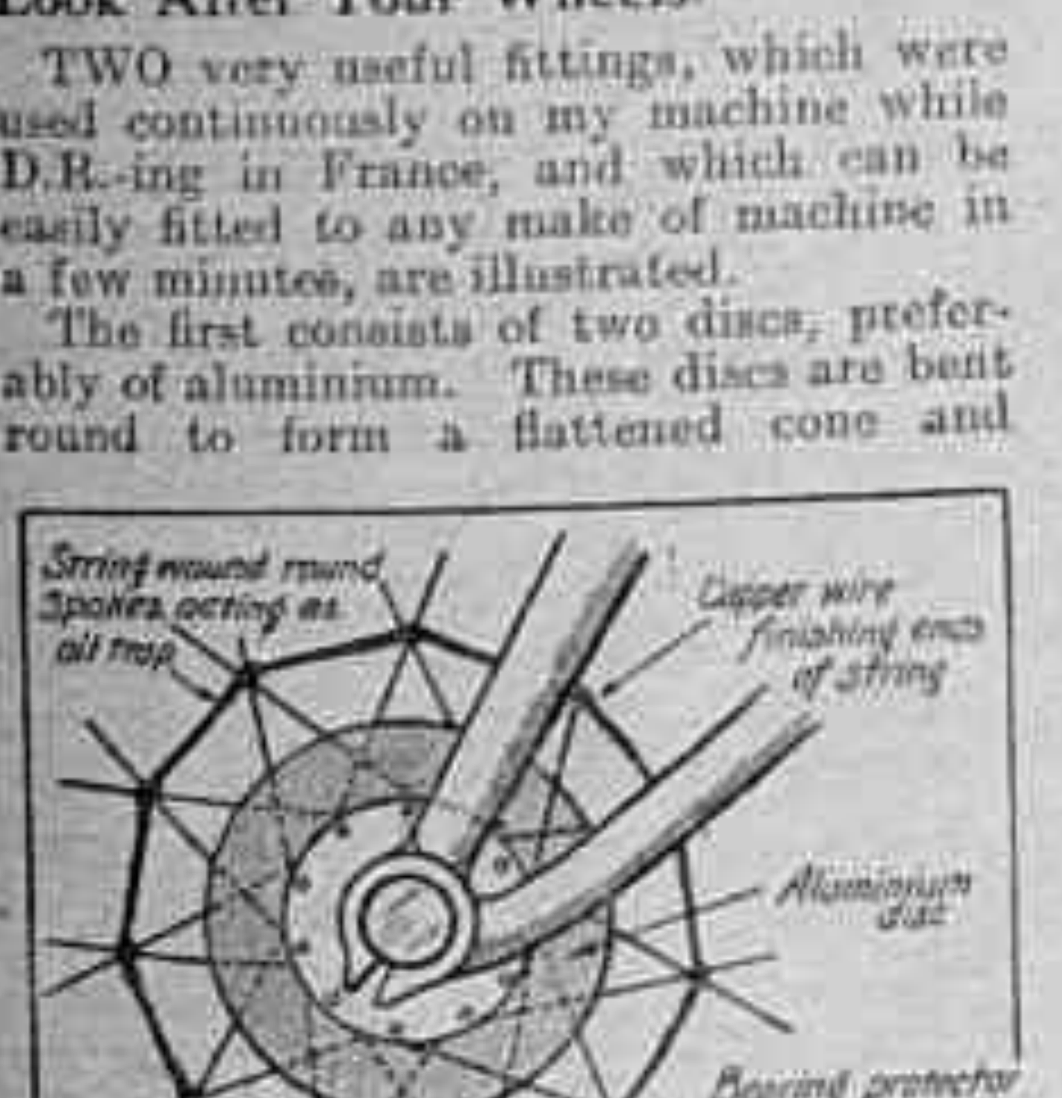
An oil-feed hint.

which controls the drip, and at the tip solder on a strand of Bowden wire about 1¼ in. long, and replace. It will be found that the oil will flow down the wire, whatever the vibration or angle of the pump.—(C.R.M.M., Barnfield, Church Road, Urmston, near Manchester.)

Look After Your Wheels.

TWO very useful fittings, which were used continuously on my machine while D.R.-ing in France, and which can be easily fitted to any make of machine in a few minutes, are illustrated.

The first consists of two discs, preferably of aluminium. These discs are bent round to form a flattened cone and

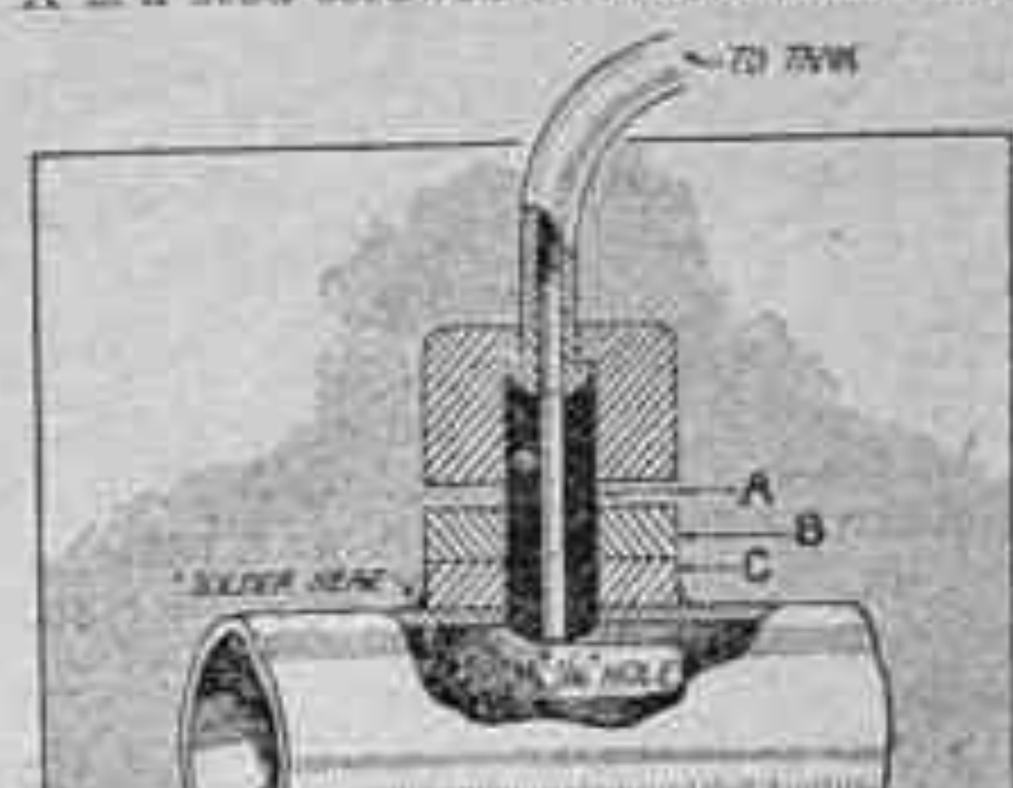


To protect your cones

mounted on the spindle of the front and back wheels, between the cones and fork, but so as not to revolve with the wheels. These form a very effective guard for the ball races, for in wet weather all water which runs down the forks collecting there, and in the ordinary way enters the bearing, is by this simple fitment drained off clear. The second fitting is a protection for the wheels from the annoying habit they display, if given a too generous supply of oil, of splashing the excess all along the spokes, on to the rims, and finally on to the tyres. This was effectively remedied by twining some strong string or strands of small cord round the spokes a few inches from the centre of the hub, neatly finishing the end by a joint of copper wire. Thus the oil is held by the string, and in spite of the revolution of the wheel it cannot spread.—(J.F.L.C., Dorking, Surrey.)

Priming Made Easy.

TO lessen the trouble associated with priming the engine I fitted the device illustrated. It is fitted into the induction pipe and connected up with the tank in a similar manner to the carburetter. A is a stud screwed to take a union nut,

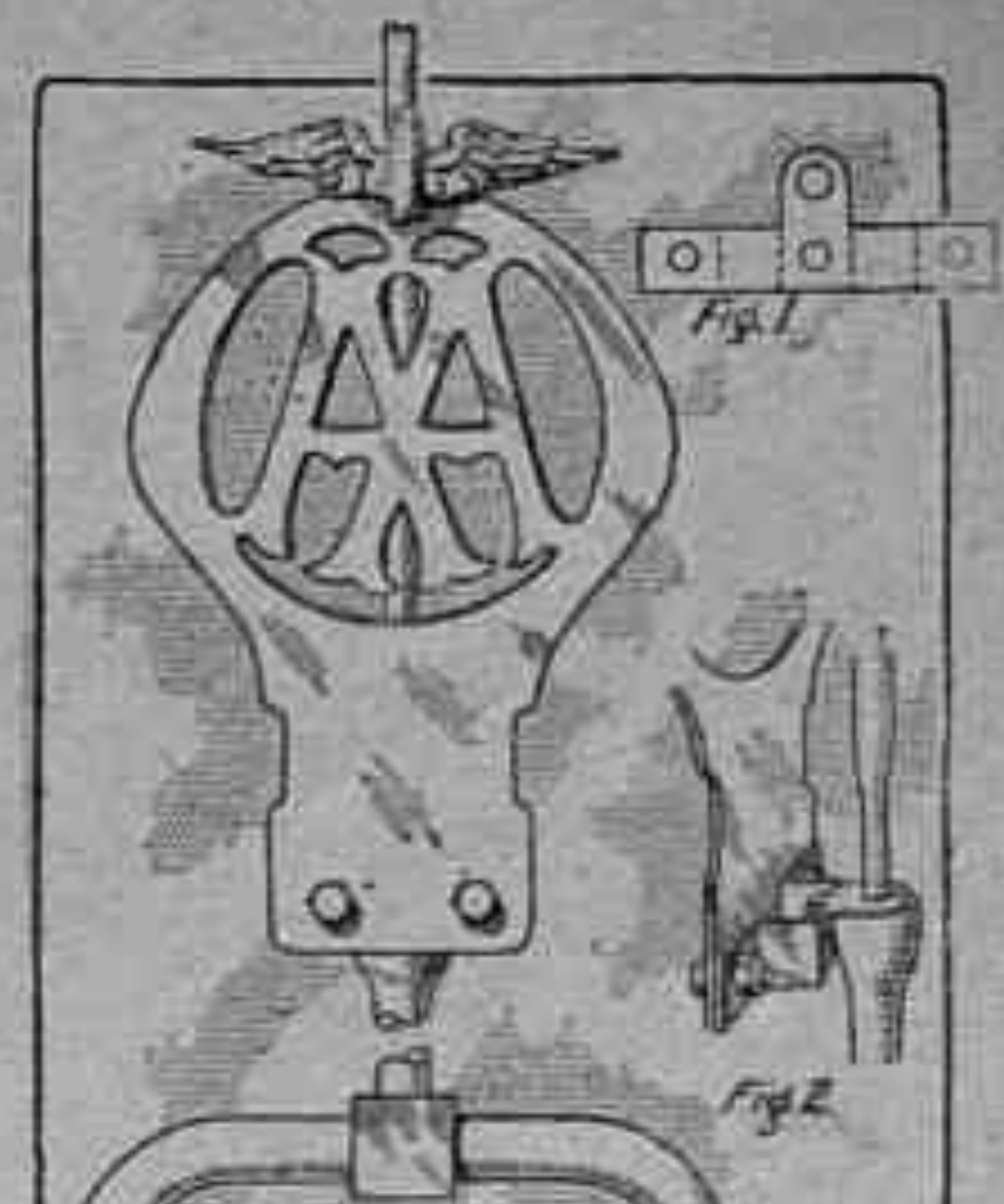


An easy starting tap.

and has a 1-16 in. hole drilled through its entire length. The stud should also be countersunk to take the union. B and C are two nuts locked on the stud to prevent its moving with the union nut, and are placed about ¼ in. away from the union end. This end is inserted in the induction pipe, to which the nuts are then soldered. The union is then screwed on and a pipe connected with an extra petrol cock on the tank. In the case of a twin the primer should be placed in the elbow of the induction pipe. Care must also be taken to see that all joints are made airtight.—(J.H.H., 34, Gloucester Street, Eastville, Bristol.)

Affixing the A.A. Badge.

PERHAPS some of your readers who, like myself, object to crowded handlebars, will be interested in a small clip for the A.A. badge. This clip enables the badge to be fixed to the front brake operating rod, without affecting it in



How best to display an A.A. badge.

any way, and has the advantage of placing the badge in a prominent position. It is made from a small piece of sheet iron cut to the shape in Fig. 1, and bent at the dotted lines to the shape in Fig. 2, and having the necessary holes drilled to enable it to be fixed to the front brake and to hold the badge as shown.—(C.C.S., Horse Fair, Rugeley, Staffs.)

Oiling Bowden Wires.

BOWDEN wires very often give trouble, especially in wet weather, if not oiled. I secured an Indian ink bottle, around which I made a file mark about 1 in. down, as in Fig. 1. If given a sharp knock the bottom can easily be broken off. The cork should be on the large size and a tapered hole burned through by a knitting needle (Fig. 2), which will allow for closing in when it is put into the bottle. Thread the cable through the cork with the wire pulled out (Fig. 3). Oil can then be poured into the bottle, and left for about half an hour, when the oil will have run through the entire length of cable.—(W.H., 51, Durants Road, Ponder's End.)

An Emergency Repair.

IT is not generally known that a broken petrol pipe can be repaired temporarily by a piece of generator tubing slipped over the fracture, and wired firmly in position. This tip helped me out of a difficulty the other day, when about 10 miles from nowhere—(H.C.T., Widnes.)



Simple lubrication of Bowden cables.

ENGINE OVERHAULING

Major Axford Deals, in Conversational Style, Engine, Rendering the Subject Readable



When removing the cylinder see that the piston rests lightly on the crankcase.

MANY motorcyclists are apparently suffering re-action from the ultra-modern motorcycle with its three-speed gear, clutch, detachable wheels, etc., and are now sighing for the limit of simplicity—the 3½ h.p. single-cylinder fixed gear machine. It, therefore, behoves one to give some advice to novices concerning the latter type of machine, otherwise they might gain a totally wrong impression of motor cycling from the pleasure point of view, albeit they may certainly have strong views concerning the sporting side!

At the outset I must say that I imagine my most enjoyable motor cycling was done on fixed-gear single-cylinder T.T. machines. I imagine that those days were joyous, although I am open to conviction that the mellowing influence of time has a lot to do with one's perspective. "The good old days!" Were they actually so good as we now picture them? I wonder!

However, I do know that I was very bucked when I climbed Birdlip on a fixed-gear machine some years ago. Climbing this hill these days on a three-speeder merely produces a feeling of satisfaction on arriving at the top, because of the knowledge that I hold the hill as very small bones when so mounted.

I propose to give a few hints to the novice on the question of tuning a single-speed machine for touring purposes as against speed. Speed merchants will probably call it de-tuning—it does not matter!

Mr. Novice, you and I will just get together in a corner and ignore the fellow whose one aim in life is to get an extra mile per hour out of his machine.

You want to adjust your bus so that it will start easily, run smoothly and climb all reasonable hills, so that you can get out on to the highways and by-ways and enjoy this beautiful country of ours. You are wise!

We will carry out this "adjusting" by means of a little chat.

First of all we will be thorough and go over the bicycle parts as well as the engine. Working from the very front of the machine right to the rear we cannot miss anything.

Tyres. Are they groggy? Perhaps they are perished. Cannot do much in that case, so we had better get some new ones—by far the cheapest way out. In any case get your tyres in the best condition you possibly can, and you can choose more or less whether you will have tyre trouble on the road or in the garage. The latter is the lesser evil by far!

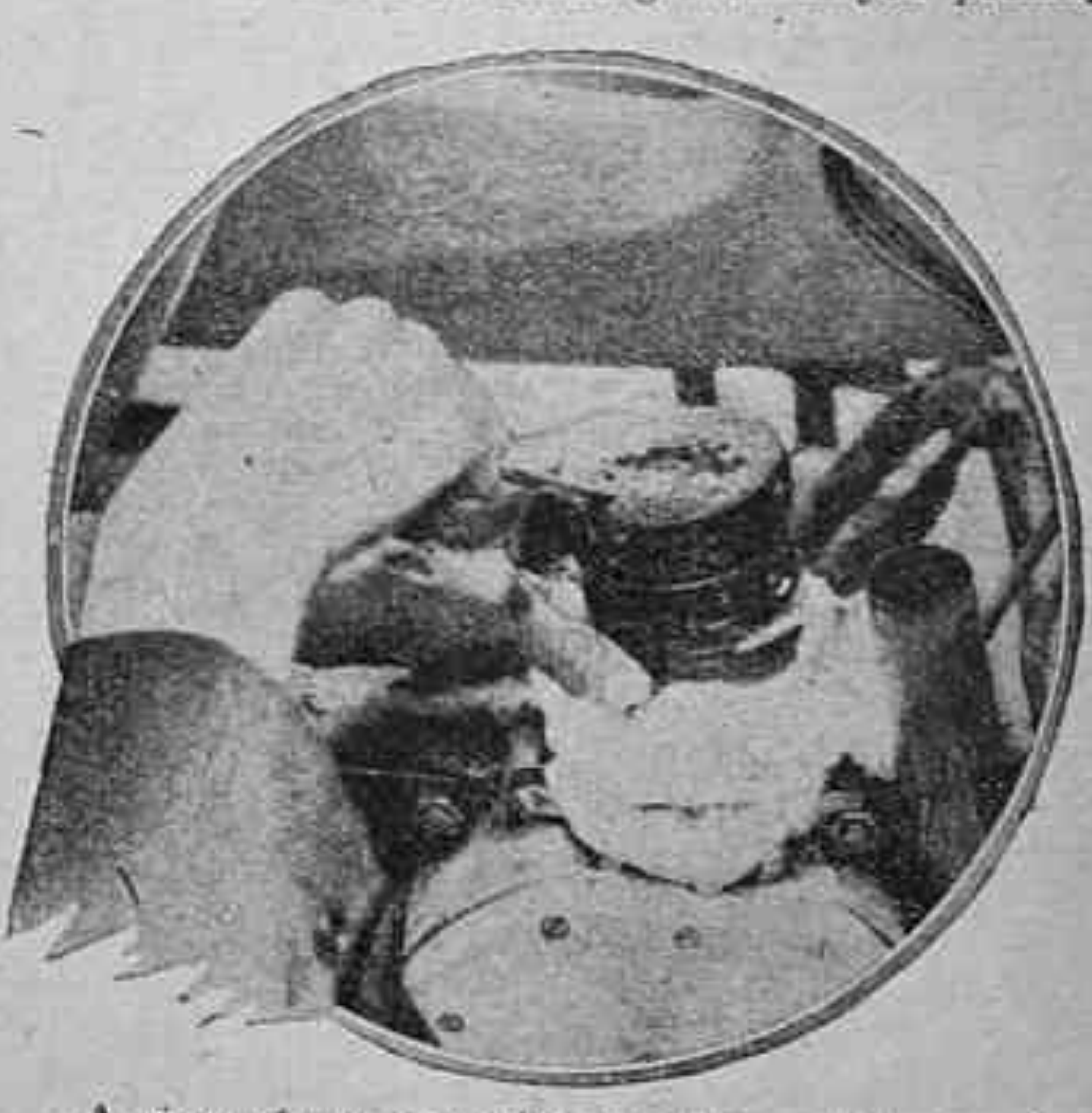
Now to examine the wheel bearings. We have simply got to have nice free running wheels, and this can only be obtained if the cones and balls are in good condition and well greased. If a ball is broken, or a cone badly worn, they must be replaced with new ones, which are not expensive.

You can see to your wheel bearings yourself without further assistance from me, I am sure, so we will now look at the spring forks. Presuming that the machine is on its stand, get a box and place it under the crankcase of the engine, the box being sufficiently high to enable the front wheel to be clear of the ground. Remove the front wheel, and we will have a look at the forks and steering head.

It is an awful shame, but it sometimes happens that owing to brute strength being wrongly applied, the steering head ball races suffer damage.

Look at yours! You will find a ball race at the top of the steering head and another at the bottom. To get at them we shall have to take the handlebars out. Have you done that? Right! Now slacken the bolt holding the part of the spring fork that encircles the steering column (which is the steel tube projecting through the steering head). Be very careful, or all the balls from the bottom ball race will drop on the floor, and you may experience great difficulty in finding all of them. Having removed the forks, examine the ball races and note if they have a perfectly true surface. If they have, all is well; if they have not, try to get new ones. This point is worth a lot, for you must have perfect steering for solo riding.

What about the links and spindles of the forks? The spindles are rusty in all probability, for although you would hardly believe it, our spring fork manufacturers have not hitherto made adequate and sensible provision for lubrication of these items. So we will just have to clean them, and when putting them back, smear as much grease as you possibly



A piece of rag should be placed round the top of the crankcase when the piston top is being cleaned.

SIMPLY EXPLAINED.

with the Everyday Problem of Tuning the and Easily Understood by the Novice.

can all over them. We can also take this opportunity of taking up any play there may be in the links. We have now re-assembled the forks, and want to put them back on the machine. Very well, put a lot of thick grease in the ball races, top and bottom, and we shall then find that if we press the balls into this grease they will stay in position.

This helps us a lot, because if we gently replace the forks, we shall have no trouble with the balls flying in all directions. In any case it is exceedingly important that the ball races are thoroughly lubricated. The grease therefore serves two very useful purposes.

After having replaced the handlebars tighten up the steering head, so that the forks swing easily from side to side, but with practically no perceptible up-and-down rock with them. Replace the front wheel, and we can then kick the box from under the crank-case.

Very likely the next point we come to is the silencer. Have this fellow off, and clean thoroughly inside and out. If the silencer is very dirty inside, it is very liable to cause back pressure or, in other words, will not allow the exhaust gas to escape sufficiently quickly. This will in turn cause overheating and loss of power. We might as well clean the exhaust pipe internally now we are really dirty.

Have you noticed that the engine seems to kick or jerk violently at each explosion? If so, this is due to high compression. Racing men love this, but it is of no use to us. What we want is an engine that runs smoothly, and is willing to take us up nearly all the hills we meet without making a nasty knocking noise. If your engine does kick, take the cylinder off and if you see any carbon on the piston and in the cylinder head, get a screwdriver or similar tool and chip or scrape it all off. Before so doing it would be very wise to put a piece of rag over the crankcase so that none of the carbon can possibly fall therein. Now we take hold of the piston and note how high the tappets rise when the engine is turned round.



A short screw-driver, with a broad blade is best to use when grinding in the valves.



A long screw-driver is useful for removing the carbon deposit in the cylinder.

Various engines, of course, vary in the amount of "lift," as it is termed, but you should find that your tappets rise and fall a quarter of an inch. If the amount is much less than this—even a sixteenth of an inch—the timing gear is probably worn. We are not sufficiently expert at present to deal with this, and so must get an expert friend, or, failing this, a decent garage man to help us out. Having satisfied ourselves in this direction, we will have a look at the valves. Remove these from the cylinder, and drop them, together with the springs, collars and keys into some paraffin. Get them nice and clean, so that we can see if the valves are seating well. If you look carefully you will see a bright line all round the seating of the valve. This brightness is, of course, due to the fact that this part of the valve is constantly hitting the valve seating in the cylinder. You will probably also see, especially with the exhaust valve, a number of small black spots on the seating of the valve. We call this pitting. The remedy is to grind these marks away.

Therefore, get some grinding compound, both coarse and fine, which you can obtain at any garage. If the valve is badly pitted, smear a little coarse paste all round the seating, replace the valve in the cylinder, and by means of a screwdriver in the slot cut in the head of the valve, grind the valve in. The best way is to turn the valve in both directions by a movement of the wrist, as if you were pushing a bradawl into a piece of wood. Every now and again lift the valve up slightly and return it in a different position. This will ensure making a good seating.

Examine the valve from time to time, and when the pitting has almost disappeared, wipe all the coarse paste off, and use the fine paste for finishing the job off. When the job is finished, wipe all traces of the grinding paste from the seatings in the cylinder as well as the valves.

It is very important that absolutely every trace of emery paste should be removed. It very often finds its way down the stems of the valves into the valve guides and also into the top of the cylinder, unless great care has been taken. A good plan is to thoroughly wash out the cylinder with paraffin, after grinding in the valves, as this is the only sure method of getting rid of every trace of the abrasive.

(To be continued.)

A BOON TO MOTORCYCLISTS.

The Sterling Patent Leg Shield.

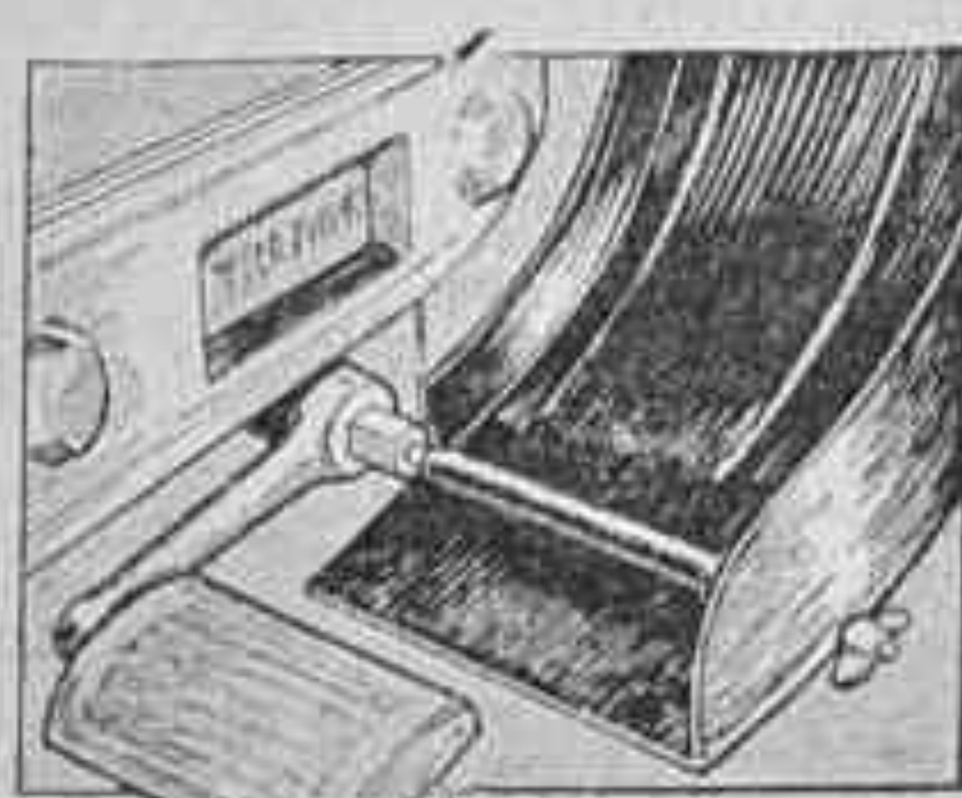
AN accessory which will help to make motor cycling the business man's ally, and will also add greatly to the comfort of the pleasure rider, is the Sterling leg shield, which has been placed on the market by the Highgate Motor Co., of 6, Highgate Road, Camp Hill, Birmingham.

A Necessity—Not a Luxury.

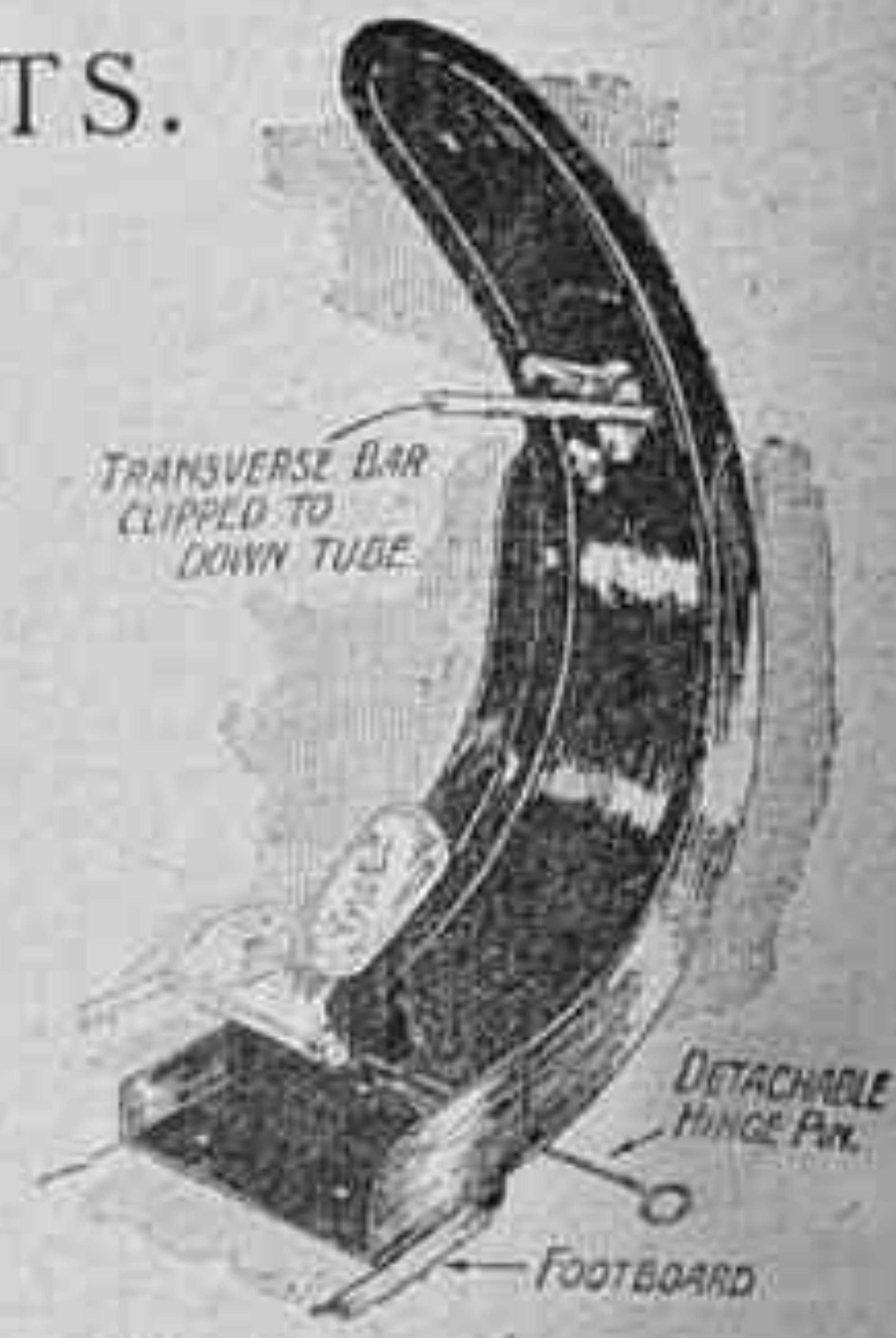
We have consistently urged in these columns the desirability of such a fitting being standardized on motorcycles, since, however large the front mudguard be made, it is never possible to obviate a certain amount of mud being blown back from the wheel and deposited on the rider's legs, necessitating the use of overalls whenever the road surface is wet. Even the shortest ride under these conditions is sufficient to cause the boots and trouser legs to become spattered with mud.

Easily Fitted to Any Machine.

The only remedy for this bugbear is the fitting of shields directly in front of the legs, and this course has been adopted by one or two motorcycle manufacturers. The shields under review, however, are capable of being easily applied to any make of machine, and, when once fitted, may be removed and replaced in a few seconds to facilitate access to the machine. The attachment to the bicycle is by a transverse rod held by a clip on the front down tube or the tube under the tank, which supports the top end of the shield, and by a hinged lower portion, with pull-out pin, which screws to the footboard. For Triumph machines, which have footrests instead of footboards, a special pattern lower fixing is employed, as will be seen from the drawing.



How the lower end is anchored in the case of a Triumph machine.



This picture shows the method of detaching the shields.

Detachable in a Few Seconds.

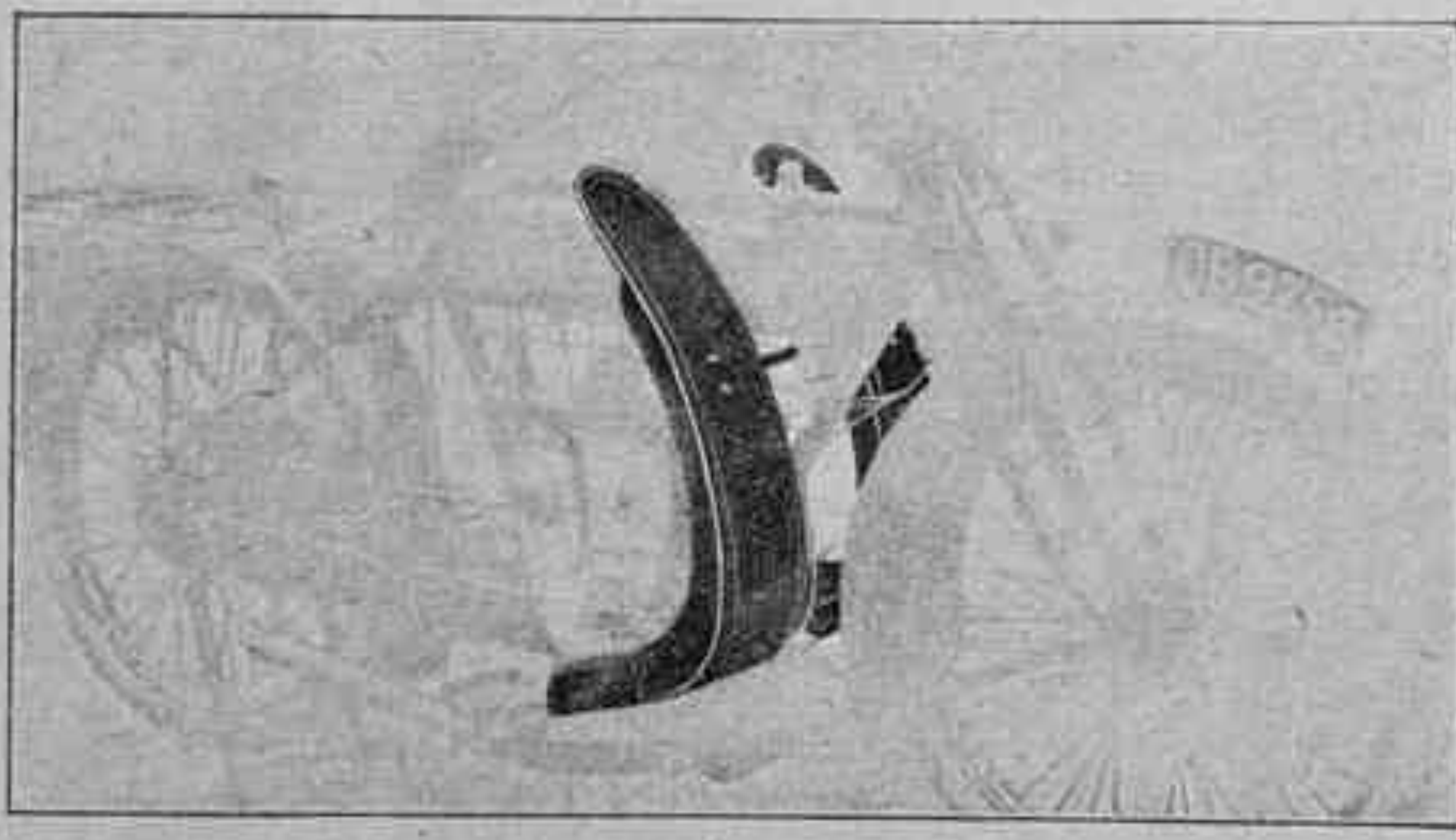
To detach the shields, then, it is merely necessary to loosen a thumbscrew, which releases the top fixing to the transverse rod, and to pull out the hinge pin, when the blade proper comes away, leaving the attachment in place on the machine. The operation takes two or three seconds, and the replacing is a correspondingly easy matter. When fixed, there is no possibility of any rattle.

A Well-made Fitting.

The blades themselves are pressed out of sheet steel, and are provided with stiffening ribs, the valances being lapped for their whole length and welded at the ends, no solder being employed. Their curve allows plenty of room at the lower end for the working of the clutch and brake pedals, and the top end is brought well up and back to provide ample protection for the knees.

They are certainly most effective, and being well made and finished they do not detract in any way from the appearance of the machine, neither do they make any apparent difference to the cooling of the engine.

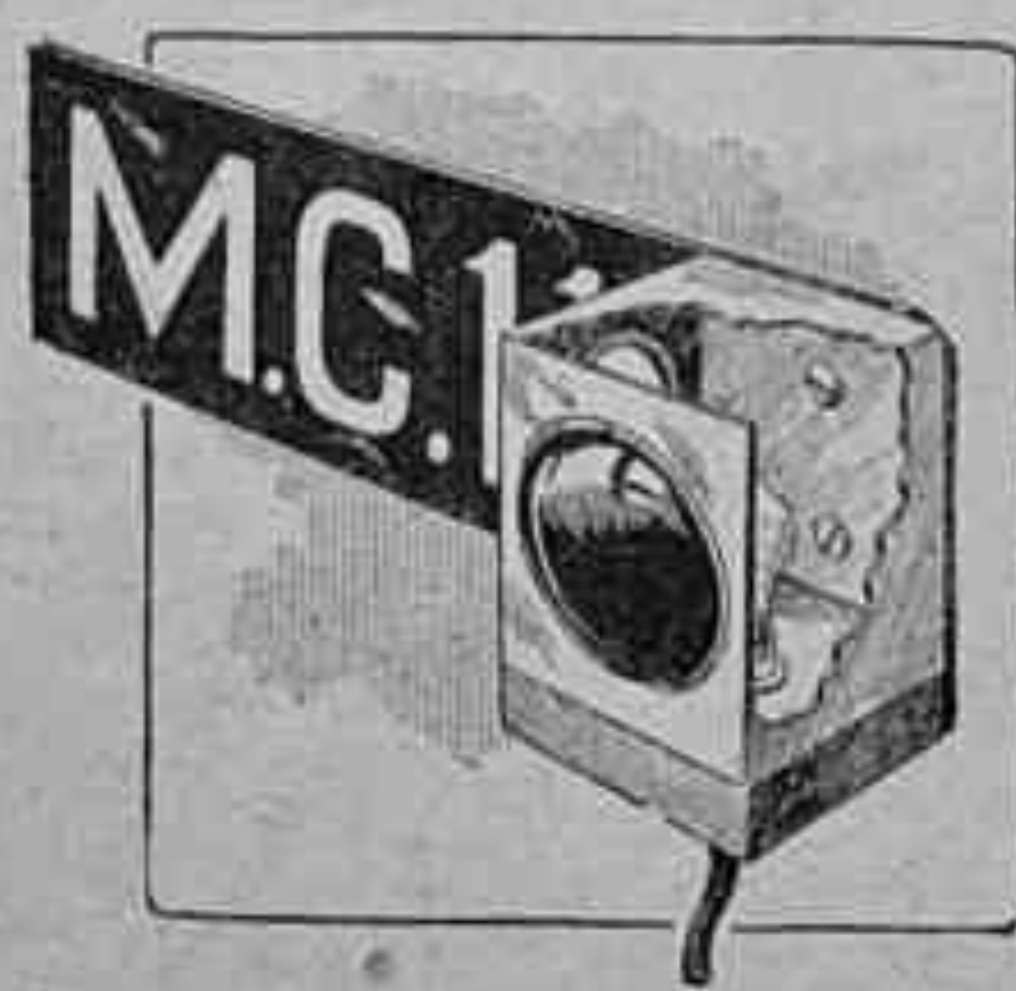
A smaller and lighter set is also made, suitable for lightweight machines, and single sets of either pattern can be supplied from stock. The retail price of both types is 50s.



The Sterling leg shields are here shown fitted to a James machine.

A Miniature Rear Lamp.

AN unusually neat electric rear lamp is to be marketed by the Service Co., of High Holborn, London, W.C. It consists solely of a rectangular nickel-plated metal box, measuring approximately 1¼ in. by 1⅜ in. by ⅞ in. Into the bottom of this box is fitted a fibre plate, which carries the lamp holder and electric cable. The plate is secured by two small screws. A red bull's-eye rear light and white side light are provided. The lamp is attached to the number plate by two bolts passing through the metal box. It is supplied complete with 2 volt 5 amp. accumulator, which is of the unspillable variety, and leather case for attaching to the saddle tube of the machine. The price complete is 27s. 6d.



A New Twin Engine.

Mr. Howard Newman, who, in 1913, used regularly to sweep the board at hill-climbs on his Ivy-Precision, has evolved a twin engine incorporating many excellent features. We have had the opportunity of inspecting this engine, and hope to describe it shortly.

Imports of Motor Spirit.

THE imports of motor spirit into this country during the last nine months show a decrease of something like 10 million gallons over that of the same period of last year. In 1918 22,956,909 gallons were imported, while only 14,770,911 gallons have been imported this year. Naturally the decrease is accounted for by the reduced use of spirit by the Army.

192

HARLEY-DA

("THE MOTORCYCLE MAG

World's Finest

DELIVERIES COMMENC



Mr. W. A. Fell-Smith on his victorious Harley-Davidson.

One of the most consistent performances by 'big-twin' sidecars was put up by W. A. Fell-Smith on a Harley-Davidson He secured 182 marks and was awarded a Gold Medal."

—The Motor Cycle 3rd Oct., 1919.

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A FISHY STRIKE STORY

An A.A. Motorcyclist Despatch Rider's Experience of Convoy Work.

ON the Thursday morning of the "strike week" I reported at the A.A. offices, Birmingham, at 9 o'clock for duty with a convoy of six lorries due to start for Grimsby at 9.30. I met the O.C. Convoy and a despatch rider and obtained particulars of the route, etc. The convoy was to consist of 10 three-ton lorries led by the O.C. Convoy and assistant in a motorcar and accompanied by two despatch riders on motorcycles, of whom the writer was one.

At the last moment orders were received that we were to go to Hull instead of Grimsby as originally instructed. Eventually we made a start for the new destination at about 11.30 o'clock. On the outward trip we travelled well, reaching Derby by 2.30 p.m., where we halted and had lunch. At 3.30 we started again and made for Sheffield; the going was rather better, for sharp showers encountered in the morning had cleared off and the weather was fine and the roads even dusty. We made good time through to Chesterfield, and on nearing Sheffield I pushed ahead to find a suitable place to park the lorries and get tea. After arranging this I returned along the road, met the convoy, and guided it in. After tea we took on petrol, oil, etc., and started for Doncaster, where we intended staying the night, and the second D.R. went ahead to arrange meals, billets, and other matters of comparative importance.

Outside Rotherham there is a stiff hill, on which one of our lorries conked out. A broken valve spring was found to be the trouble, so I stayed behind to help the driver whilst the rest continued on the way. We soon got the machine running again, and just outside Doncaster were met by the other D.R., who guided us in. I was thoroughly tired out, and bed has seldom been more welcome than that evening, or rather morning, since it was 2 a.m. before I turned in.

We were up again at 5.30 a.m., breakfasted, and started on the last stage by 8 a.m. The road taken was Doncaster, Selby, Market Weighton, Hull. The weather was glorious and the roads good but dusty. We left mails at Beverley and arrived in Hull at 1 p.m. I had gone on ahead and advised the Food Office of our arrival and secured a guide to take us to the Docks and G.P.O., where we unloaded two tons of mails.

We were hoping that our lorries would be loaded whilst the drivers and I were having lunch, and thus be ready for an early start back. A certain amount of confusion existed at the docks, and after some of the lorries were loaded with fish, further instructions came that this was the wrong stuff and that they were to be unloaded. This was commenced, and again we were told that the load could not go and that we could put it back again. This happened several times, until we were thoroughly exasperated, and at 5 p.m. our O.C. Convoy, having all six lorries full of fish, drove off with the comment that having come for fish and got a full load we were going off with what we had, right or wrong!

We got our petrol and stores close by the docks and started for home about 5.30 p.m. I remained behind to get a telephone call through to Doncaster to arrange for meals and petrol, etc. This took a long



"During the night, which was very foggy, we suddenly found ourselves in a ploughed field."

A Fishy Strike Story (contd.).

time, and I left Hull at 7.30 p.m. Just outside I came across one of our lorries broken down. I stopped to give a hand, but our second D.R. had advised the Food Transport Officer of the trouble; shortly after I found the lorry a fitter came along to put things right. The D.R. then came up, and I left him with the vehicle and proceeded to chase our convoy. I overtook this at Doncaster and then learnt that owing to the fog and bad lights on the lorries the drivers refused to proceed further. All efforts to induce them to proceed further in order to get the fish into Birmingham in time for the market were futile with one exception. This driver refused to remain in Doncaster, but stated his intention of pushing on and getting home for the week-end. Eventually it was arranged that the O.C. Convoy went forward with this man whilst I remained behind with the remaining four ready to make a start first thing after daybreak for Sheffield. At this city it was arranged to unload the fish, as it was doubtful if it could be got to Birmingham in time for the market, and the Food Office was communicated with and necessary arrangements made.

Lost—A Convoy.

I turned in for a rest at 2.30 in the morning, after having seen the men and arranged for a start at 6 a.m. At 5.30 I was up and round at the place where the lorries had been parked, but, to my surprise, there was no sign of them anywhere. I called round at the Y.M.C.A. where the men had put up, and there learnt that they had breakfasted at 4.30 a.m. and gone out, and a policeman informed me that he had seen the four machines moving off together about 5 o'clock. Without having my breakfast I started off in chase of them, but on account of thick fog could make but slow progress. Half-way between Rotherham and Sheffield a night watchman said that he had seen four lorries pass about an hour previously, but there was no further sign of them. I reported what had happened to the Sheffield Food Office, the inspector there being rather upset because he had been called up at 2 o'clock in the morning to interview the fish dealers and arrange to take delivery of our 12 tons of fish. We rang up Derby to inquire if anything had been seen of the lorries, but no information could be gained.

After a rest and some breakfast I felt better, for I was thoroughly chilled by the early ride without food and started off for Birmingham, via Chesterfield, Derby, Burton and Lichfield. Arrived in Derby I called at the Police Station, but they could tell me nothing beyond the fact that a lorry was reported broken down about eight miles along the Nottingham Road. On account of the time that this report was received it could not be one of ours, so I continued on to Burton. Half-way there I overtook five machines, and, to my surprise, discovered that four of them were those which I was seeking and the fifth was the one which had volunteered to continue through the night, but had been obliged to abandon the attempt owing to the fog. A little further on I overtook the O.C. Convoy, and we rejoined forces.

All Finally Check In.

Outside Lichfield one lorry broke down with a burst water joint, so after giving the leader of the remaining four instructions as to meeting a guide at Aston Cross, I stayed behind to give assistance to this one. We soon had it going again; the rest of the journey was without incident and the lorry drove up to the market in triumph with its load of fish. I then reported the arrival of the five machines to the Food Office, Margaret Street, and afterwards called at the A.A. Offices, where I gave them an account of all that had happened since Thursday. About an hour and a half later the sixth lorry turned up. This had been got into running order about 10 p.m., and, guided by the D.R. who remained with it, had continued through the night. It had met with the same trouble as the other one, and was held up by the fog after having taken a wrong turning and found itself travelling over a field instead of along the road.

With some difficulty they got on the right way again, and then the motorcycle punctured. The lorry went on whilst the D.R. slept by the roadside until it was light enough to see to mend the tyre. He then chased the lorry through the fog, but not seeing a turn in the road, charged a hedge and took a header over the top of it. Luckily no damage was done. A.A.D.R.

THE PETROL CAN WASTAGE.

THE hoarding of petrol cans is still hampering the petrol supply, and most dealers have a harassing time settling ratiocinative carriers before getting their allowance owing to the thoughtless customers to whom the sum of three pieces of silver is of no account, hanging on to their tins long after they have extracted the precious contents. Dealers who refuse to split a can are largely responsible for the accumulation, for when a man happens to run out of petrol he cannot reasonably be expected to produce an empty in exchange for the full one thrust upon him against his will. At present there seems to be two sorts of garages; those that make people have cans they do not want and those who devote their attention to withholding cans from those for whom a tankful is insufficient. So if you have any cans on the mantelpiece, Mr. Reader, fill up the sidecar and enable somebody to have the benefit of the receptacles in which they dish out our juice.

The subject of leaky cans reminds us that the dealers, and others, are suffering considerable loss owing to the terrible condition of some of the cans or the people who fill them, it is uncertain which. Anyhow, two cans out of three are anything from a pint to a quart short in their measure, and the dealer who sells in single gallons will surely have a balance on the wrong side of the petrol account if he gives honest measure. This is one reason for refusal to split cans for motorcyclists and a characteristic sample of the business methods of the petrol ring ever since it came into being. I believe I am right in assuming that the tins of some motor spirit companies will be found to contain good measure, so the excuse of old cans from the other concerns will not hold water—or petrol. Another side of the question is that motorcyclists in the habit of buying tin cans have discovered the shortage in the contents and now make their purchases in gallons to ensure good measure, which hits the poor old petrol purveyor "some more" as the over-astute ring interests would put it. It is an understood thing that if a butcher tries to include a few extra pounds when he sells a chop the weights and measures people come along and want to know all about it, but for some reason or other petrol can be handed out 10 per cent. short in its alleged quantity at an extortionate price (for there is no commercial reason other than supply and demand for the price of 3s. 1d.), and nobody says a word, not even Mr. Bottomley.

There was some excuse for the improper use of petrol cans during the war, as these served so many useful purposes, for which nothing else was available. This does not hold good now, so out with those cans!

CLUCATOS.



THE EDITOR'S CORRESPONDENCE



The Editor is not responsible for, neither does he necessarily agree with, the views taken by correspondents. Both sides of any topic are given equal publicity. A pen-name or initials can be given for publication, but the writer's full name and address must always be sent. All communications should be written on one side of the paper only and be in ink. Envelopes should be clearly marked "Correspondence."

That Silencer Test.

With regard to the A.-C.U. Six Days' Trial, Dr. Low's apparatus for alleged recording of noisy engine no doubt was well meant, but seeing that some of the noisiest machines got through with the loss of practically no marks, whilst the quietest were penalized heavily, leads one to conclude that this so-called recorder had its reverse gear in.

J. H. PRICE.
For HUMPHRIES AND DAWES, LTD.
Birmingham.

Diagnosing Your Troubles.

In *Motor Cycling* of October 15th, an article over the signature of L. Mantell appears, the heading of which—"Diagnosing your Troubles"—would appear at first sight to be of more than passing interest to motorcyclists. On perusal, however, one's interest abates, and curiosity takes its place.

L. Mantell leads off by stating that while an ignition miss is a definite miss, a carburation miss is vaguer, and then goes on to describe the symptoms and causes of pre-ignition on a hill. In both cases he is 100 per cent. correct, but he opens up a rare field for argument when he states "Insufficient tappet clearance and binding, when the engine becomes overheated, might possibly be mistaken for pre-ignition." Not by any motorcyclist of sufficient experience to learn of the existence of such things as tappet clearance and pre-ignition, surely.

He then states, "The former simply causes some loss of power, usually accompanied by knocking, etc." I doubt if any engine yet produced has been known to knock through insufficient tappet clearance.

Finally, he has the following paragraph in his article.

"The difference" (between pre-ignition and detonation knock) "is that in detonation the pressure resulting from the early stages of combustion compress and heat above its spontaneous ignition point the remainder of the charge, causing it to detonate throughout its remaining mass and producing the characteristic noise."

Although I consider myself a motorcyclist whose experience is greater than that of those for whom an article on diagnosing of troubles is normally written, I confess that, even after careful consideration, I am at a loss to understand what on earth is meant by this.

Anyhow, here we have a man who talks glibly of detonation taking place inside a motorcycle cylinder. Is it possible? Perhaps L. Mantell will respond to criticism. J.S.

Folkestone.

Long Life and Good Service.

The letter over the nom de plume "Powerplus AY2538" is, I think, a pretty representative specimen of the large number of letters written by riders who seem to think their machine wonderful if it runs 5,000 or 6,000 miles before it falls to pieces. I am not writing this out of any spirit of prejudice against American machines, because I do not believe in condemning any machine on mere hearsay, and that is all the information I have regarding the Yanks, having never owned one.

But for any rider to rush into print, holding up as an example to British machines what he considers the wonderful feat of running 6,000 miles and still having its bearings in good order is, to anyone who really rides seriously, and particularly to the man who uses the motorcycle as an agent towards earning his living, quite ridiculous. Six thousand miles would, before the war, have represented for me about eight weeks' riding, and I should have very soon parted with a machine that required any replacements (mechanical) in that period.

Perhaps I was lucky, but I had a 3½ h.p. Humber that did 56,000 miles and a 4-5 h.p. Zenith that did 39,000 miles before I parted with them. The latter I bought second-hand, and I do not know what mileage it had done before I got it, but after it had done 3,000 for me I got the makers to overhaul it, after which it did the other 36,000, and when I joined up it was in splendid condition, there not being an atom of shake in any bearing.

I have no doubt there are lots of riders of the "fine week-end" type who love to swank about on brilliantly painted machines, which they lovingly polish up after every run with cleaning wax, and go about amongst their friends boasting about the marvellous performance of their bus, which has all its bearings perfect after 5,000 miles. That recommendation will not sell any machine, either British or American, to the discriminating rider. ELDON.

Reading.

Motorcycle Racing in Spain.

Perhaps it may interest some of your readers to know the results of a motorcycle race recently held in the mountains of the Guadarrama, about 50 kilometres from Madrid.

The race was of 12 hours duration with only a few minutes allowed in the laps. It was a very severe test for rider and machine. Of the 30 entrants 28 faced the starter at Villalba (Jaboneria). The course consisted of long stiff gradients, short, steep descents, and numerous hairpin corners. The majority of the competing machines were of American manufacture, Harley-Davidsons, Indians and Excelsiors. Only two English machines were entered—a Baby Triumph and a James. Both machines ran remarkably well, and occupied creditable positions.

Seven laps had to be covered, and the race was a truly remarkable test, considering the nature of the course. Controls were arranged at frequent intervals along the roads.

The winner of the solo class, Francis Florencia Tuentes, who covered 742 kilometres 800 metres in 12 hours, an average of 37 miles per hour. In the sidecar class the first man was Luis Coppel, who covered 679 kilometres 218 metres. Each lap was 93 kilometres 860 metres. The fastest time made for one lap in the solo class was 1 hr. 27 mins. 11⅗ secs., and 1 hr. 34 mins. 25⅗ secs. in the sidecar class.

Twenty finished out of 28 starters, all the premier awards going to the Harley-Davidson machines. In the solo class they finished first, second, third, fourth, and ninth, and in the sidecar class first, second, third, fourth, fifth, and eighth. All the Harleys entered were equipped with Dunlop tyres—a great triumph for Dunlops. F. HARLAND SCHIFIELD.

Road Tests of New Models.

I have been very interested in your recent articles describing your experiences of road tests of new models. You seem to have acquired the knack of describing the particular features regarding which we would-be purchasers require information, and the fact that you criticise various features in the machines under review makes your opinion all the more valuable, as we know from this that your remarks are unprejudiced. I hope that we shall have many more articles of this nature to while away the weary winter months.

Liverpool. G. F. THOMAS.

Correspondence (contd.).



Mrs. 'Obbs: "Bein' the vicar's daughter o' course! But just think o' what would be said if I was to dash about the village on one o' them 'orrid cyclone things!"

The Triumph in the Six Days.

Our attention has been drawn to the statement that recently appeared in our announcements to the effect that the Triumph was the first single-cylinder sidecar combination to gain full honours in any Six Days' Trial. This claim was made quite in good faith; in fact on the strength of a report contained in the motor cycle Press.

We regret the error that has crept into our announcements, as both Messrs. The James Cycle Co., Ltd., Birmingham, and Messrs. Bradbury and Co., Ltd., Oldham, assert that a similar performance has been achieved by one of their machines in previous Trials. It is not our wish to claim any performance that is not rightly ours.

Coventry. THE TRIUMPH CYCLE CO., LTD.

Surplus Government machines.

The following letter addressed to the Secretary of the War Motors Association has been forwarded to us for publication by the undersigned.

The Secretary,
War Motors Association,
240, High Holborn, London, W.C.

Dear Sir,—I have just noticed a statement in *Motor Cycling* to the effect that W.D. second-hand motorcycles are being retailed by you to ex-officers and D.R.s only. May I ask if this is to be interpreted literally?

If so, I beg to protest as an ex-infantryman and enthusiastic motorcyclist against the invidious distinction between different ranks and duties in the British Army.

What right has an ex-officer or D.R. over an artilleryman or infantryman (who between them have done most of the real work of the war) to obtain Government stores?

Everyone out here has done his bit and no more, and I fail to see why preference should be given to officers or D.R.s over any other branch of the Service.

It is such distinctions as these which tend to render men bitter and help along that old class prejudice which was so strong before the war, and which we all hoped would end with the cessation of hostilities.

EX-INFANTRYMAN.

Le Havre, France.

[Our correspondent is evidently labouring under a misapprehension. It certainly was originally suggested that D.R.s should be allowed to purchase their machines, the reason for giving them preference being that in many cases the Government purchased their machines at the outbreak of war. We quite agree with our correspondent, and would refer him to an article on the War Motors Association, published in our issue of August 27th, page 428. He will then see that it is open for any ex-Service man to purchase a motor vehicle of any description from the Association, and that everyone, irrespective of rank, has to take his place on the waiting list in the ordinary way. The work of the W.M.A. was somewhat upset during the strike, but it is now again in full swing.—ED.]

WHY PRICES ARE HIGH AND REMAIN HIGH.

A Manufacturer Explains.

There is a considerable amount of confusion in the minds of the buying public at the moment regarding the way that prices of motorcycles are apparently soaring without limitation. It appears to the layman looking on from outside that manufacturers are thoughtlessly striving, without restraint, to attain the highest standard of charge that their customers will stand. Profiteering suggests itself, and dissatisfied grumbling results.

A careful survey of a few apparent facts helps to clear the air of a considerable amount of misunderstanding, and clearly illustrates the conscientious endeavour with which the British motorcycle manufacturer has striven to produce an article to suit the pocket of his patrons. The only basis upon which the value of a present-day commodity can be estimated is comparison with pre-war prices. We are already paying 100 per cent. or more advance upon our present food, and household goods and chattels. The cost of everything is doubled. The reason is not difficult to trace. The war with its trail of waste has to be paid for. A slight advance in the cost of living heralds a demand by labour for higher wages. Higher wages mean higher cost of production with a further advance in cost of all commodities. This state of affairs has been developing for some time now, and the rate of wages has advanced to nearly 100 per cent. beyond pre-war standard.

Now, motorcycles in common with other manufactured articles, are produced from raw material extracted from the earth. These raw materials are actually as free as the air, with the exception of the cost of labour that extracts them. Here we begin to see light. The cost of labour that extracts the raw materials is up 100 per cent., the cost of labour that manipulates the material is up 100 per cent., and the cost of labour that completes the work is up 100 per cent. But has the price of finished motorcycles yet reached an advance of 100 per cent. over pre-war standard? The answer is decidedly "No!" It is therefore fair to suppose that until this level has been attained prices will continue to soar.

Motorcycle manufacturers when faced with the matter of post-war production gamely tackled the problem of estimating selling prices of their products before these were actually in progress in their works. Subsequently where production has been attained by a few firms it has been found that these prices have been seriously under-estimated. As the makers of castings, tubing, components, etc., are repeatedly raising their prices, no definite basis can yet be arrived at while daily strikes and other disturbing conditions make matters more difficult. No wonder the lot of the manufacturer is difficult, and no wonder prices soar! The high-water mark that suggests itself is double pre-war standard. When this has been reached, no doubt prices will stand firm.

There is, however, a gleam of hope for the future. When labour questions have been settled, strikes no longer occur, and steady production can be maintained, massed output will be possible, and a steady decrease in prices must surely result. Lack of understanding causes confusion and is unconvincing. A considerable amount of present confusion arises through manufacturers advertising prices when they have not yet reached production. Subsequent events will prove in many cases that these prices cannot hold good when deliveries commence. Comparison is made between these advertised prices and the advanced prices of manufacturers who are actually delivering the goods. The well-advised intending purchaser will bear these points in mind, make his selection, and place his order now before prices advance further, rather than risk disappointment through indecision.

F. ASLETT COULSON ENGINEERING CO.
FRED. A. COULSON, Proprietor.

Albion Works, Albion Street,
King's Cross, London, N.1.



RULES.—Requests for information and advice must be forwarded in envelopes marked "I. and A.," a stamped addressed envelope being enclosed for the reply. Questions, and machines upon which an opinion is sought, should be numbered and a copy kept for reference. Touring and legal questions must be kept separate from technical matters. Readers are asked to refrain from making inquiries on the telephone. A selection from the replies is published each week.

Q Will you kindly give me information on the following? I have an 8 h.p. engine which is fitted with an automatic inlet valve, and it has recently been rebushed. My trouble is that I cannot get it to fire at all when the magneto is coupled to the engine. It is possible to make it fire by holding the engine at the top of the compression stroke and spinning the magneto with the hand.—B.C. 1919.

A The trouble may be brought about by the fact that the magneto was incorrectly timed when coupled up to the engine. Place the engine on the top of the compression stroke, two-thirds retard the magneto, and see that the contact breaker points are just separating. It is also possible that the magneto is not turned at sufficient speed when coupled to the engine to cause a spark.

Q My Villiers-engined Diamond two-stroke is affected with a rattle when ascending even moderate gradients, and when this occurs power falls off considerably. By fully retarding the spark it is cured somewhat, but occurs again before topping the rise. The ignition on being checked is—piston top dead centre, full retard. For hills—oil supply makes just perceptible smoke. Machine has done 500 to 700 miles since it was last thoroughly decarbonized.—W.H. (Wombourne).

A The cause of piston rattle in two-stroke engines has never been positively determined, but as your machine has only recently acquired this bad habit, it should be fairly easy to locate and cure. We suggest that you dismantle the cylinder again and clean off carbon deposit, also make sure that the rings are free in the slots and not broken. Some authorities hold that the ridge on the top of the deflector of a two-stroke piston gets red hot, causing pre-ignition; and if this ridge is very sharp in your engine it might be advisable to ease it off a trifle. The use of an unsuitable plug is sometimes the cause of two-stroke rattle, but it is hardly likely to be so in your case, as you are using a plug specially made for the job. You might, however, try the experiment of fitting a new plug before doing anything else.

Q Will you kindly tell me how to remove a N.S.U. engine shaft gear? It has a cap with a square hole.—G.F. (Beeston).

A Remove the cross bolt which secures the operating fork, and then by means of a square spanner remove the nut, which is what you refer to as "a cap with a square hole." This nut has an ordinary R.H. thread, and the action of unscrewing will withdraw the whole gear complete.

Q I have an old 6 h.p. twin-cylinder motorcycle, and have recently purchased a new magneto, having fixed this on to the machine. I find that I cannot get any spark at the plug points when turning the back wheel by hand, although with the magneto chain removed and turning the sprocket by hand there is a good spark. I have tried fitting two non-magnetic sprockets, but the result is just the same. There is no current at all passing to the plugs with the chain on. (1) Is this magneto, an E.I.C. type A.V., suitable for the machine. (2) If its position on the machine has anything to do with the failure to get a spark. (3) If there is anything I might do to effect a remedy. (4) If I remove one of the cams, will the magneto be satisfactory for use on a 3½ h.p. single-cylinder machine?—J.M. (Manchester).

It is absolutely impossible to answer queries over the telephone, and readers are asked therefore not to make the request.

A The magneto is quite suitable for your engine. In all probability the road wheel of your machine is not rotated at sufficient speed to effect a spark at the plug, when the magneto is coupled to the engine. (2) The position of the magneto on the machine cannot have anything to do with its failure to spark. (3) The best method of testing the magneto would be to try the machine on the road. (4) It would be quite possible to use the magneto for a single-cylinder engine by removing one of the cams. A very satisfactory method would be to use only one of the high-tension terminals and earth the other.

Q Could you tell me the amount of wire that is used for primary and secondary coils of a h.-t. magneto? I have got a low-tension magneto with armature the same size as a h.-t. armature, and I have plenty of both primary and secondary wire. If you think it would be better to put the low tension on the machine will you let me know how to wire same up.—R. (Battersea).

A It is quite impossible to say how much primary and secondary wire is required for a given armature without knowing other data, including the coercive force of the magnets and the permeability of the core. Roughly speaking, about two layers of 16-18 gauge wire would be required for the primary, and about 20,000 turns of 36-gauge silk-covered or enamelled wire for the secondary. The number of turns would be governed in your case by the amount of room in the armature tunnel. We strongly advise you not to attempt to convert your low-tension magneto, as a contact breaker, slip ring and condenser would be required, all very difficult to incorporate in a machine not designed to receive them in the first place. As regards fitting the low-tension magneto as it stands to your machine, this will only be possible if the engine already has a mechanical breaker inside the cylinder. If your engine possesses this, as there is only one terminal on the magneto and one on the engine, you cannot go wrong in the wiring up. No sparking plug is used with a low-tension magneto; the spark is caused by the sudden rupture, *inside the cylinder*, of the flow of current, which is achieved mechanically.

Q I have a 1915 Douglas, two-speed, which I purchased about three months ago, and have just overhauled it. Before this I went about 1,000 miles, and though it ran very well at first, towards the end power fell off and the engine overheated, also compression was poor. After re-assembling, compression is about the same and the engine gets hotter than ever, and there is no improvement in the power. (1) Do you think I need new piston rings? (2) If so, where could I get them? (3) Is it right for sparking plug to get too hot to hold? (4) There are only two rings; is this right?—S. Page-Smith (Longford).

Information and Advice (contd.).

A (1 and 2) New piston rings might possibly effect an improvement. You could obtain these from Messrs. Douglas Motors, Ltd., Kingswood, Bristol. It is evident that there is something radically wrong for your machine to behave in the manner it does, and it is doubtful whether new piston rings alone would completely restore the power. As the machine starts up easily and fires regularly, the trouble is somewhat obscure. We advise you to go over all the details carefully, including an examination of the valves, which should be examined for warping. Inspect the valve seats for cracks and see that there is clearance between the tappets and the valves. You should also fit a complete set of new valve springs. We presume you are sure that the magneto contact breaker is not jammed in the retarded position? (3) A sparking plug always gets too hot to hold within a very short time after starting. (4) Two rings is correct for a Douglas piston.

Q I bought a 2¾ h.p. 1910 twin Enfield, and find that it only fires well on the front cylinder. The trouble seems to be the magneto. At times the back cylinder will fire perfectly, but at others only an intermittent spark is obtained, even at speed. The plug is all right, as changing has proved. I have tried various settings of the contact breaker, which appears to be in good working order. The carbon brushes seem all right—I changed them, and it made no difference—nor did changing the cables. A good shock is obtained, even at slow speed, at the plug end of the cable, and a good spark when cable end is held almost touching cylinder, although no spark is obtained at plug. On cleaning the plug points and making them very close, good firing results for a time only. The slip ring is clean.—D.A. (Alloa).

A We are inclined to think that your trouble is not due to the magneto at all, but to an air leak at the back induction pipe joint, which upsets the mixture to the rear cylinder. We should advise you to tighten up the induction pipe nuts and see that the inlet valve stems and guides are not unduly worn. It would also be as well to wrap some insulating tape round both induction pipe joints. If this is not the trouble, perhaps the rings on the back piston are rather worn, and allow an excess of oil to pass, which would have the effect of oiling up the plug in a very short time. In this case, the remedy would be new piston rings, or as your machine is a very old one, and has doubtless seen a good deal of service, it might even be necessary to have the cylinders rebored and new pistons fitted.

THE ODD CORNER.

An Address Wanted.

WILL Mr. H. A. Connell, who recently wrote to the Licences and General Insurance Co., Ltd., please forward his address to them?

The "Fastnut" Washer.

MOTORISTS who experience trouble with nuts coming loose will do well to fit the "Fastnut" washer, which automatically locks each nut. Vibration, no matter how severe, will not cause slackening, and such things as castle nuts, slots, cotter pins, and drilled bolts can be entirely dispensed with. Fitting one of these washers is simplicity itself. The washer, which has three teeth, is dropped over the bolt, teeth downward, and the nut put on and screwed up. The action of screwing up the nut flattens the teeth and holds the washer to the bolt, while two spring flanges on top of the washer prevent slacking back, although allowing the nut to be turned. To remove, it is only necessary to prise the washer up sufficiently to release the teeth, when it will unscrew, and the bolt is in no way damaged. These washers have been adopted as a standard fitment on the London General Omnibus Co.'s vehicles. The sole agents for the motor trade are Brown Bros., Ltd., 22-34, Great Eastern Street, London, E.C.



The Fastnut locking washer, showing method of application.

What Is It?

INFORMATION is sought by one of our readers as to the manufacturers of a magneto ANM, patented December 1, 1914. It has, says our inquirer, no contact breaker, but when the armature is actuated an appreciable current can be felt between the lead and earth. It is not, however, sufficient to produce a spark except at the moment when the circuit is broken, and at the point of breakage.

An Important Reconstruction.

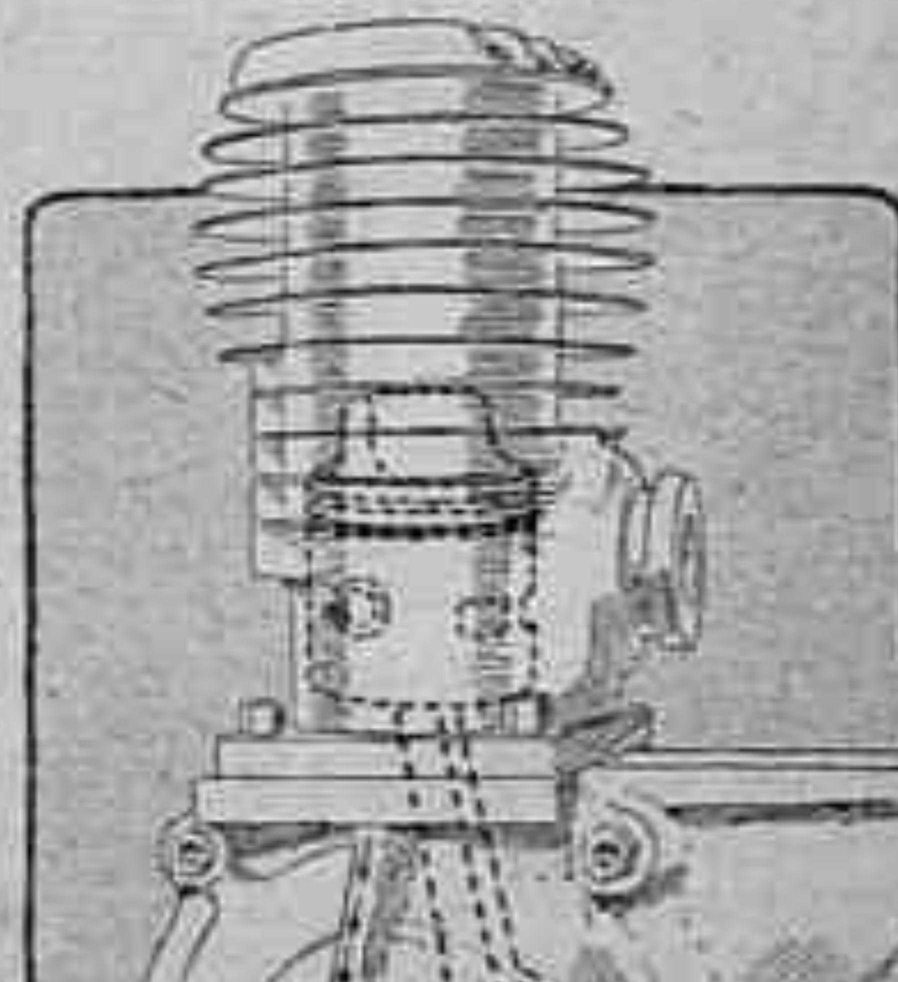
WE have received information to the effect that the old-established firm of Middlemore and Lamplugh, Ltd., of Coventry, Birmingham and Walsall, is in voluntary liquidation solely for the purpose of reconstruction consequent on the separation of the several branches. The business is in a flourishing condition. Liabilities will be discharged in full. A new company under the title of Middlemore (Coventry), Ltd., has been registered to take over the whole of the assets of the Coventry branch. Middlemore (Coventry), Ltd., is a private limited company, and Mr. W. A. De Lattre, who has had sole control of the Coventry business, is still retained as managing director with a seat on the board, and associated with him are Mr. H. J. Mason, managing director of D. Mason and Sons, Ltd., of Birmingham and Wolverhampton, saddlery and harness manufacturers, Mr. J. H. Bromielow, engineer, formerly of Kynochs, and Mr. Alf. Bednell, whose name needs no introduction to the cycle and motorcycle trades.

The South African T.T. Race.

A SPECIAL commemorative prize—gold medal with diamond centre—has been awarded to J. P. Booth for his wonderful performance in the South African T.T. race on a Baby Triumph. Despite the small capacity of his engine, he finished fifth in the 397-mile course, with an average speed over the full distance of over 25 miles per hour. C. H. Young (4 h.p. Triumph), who finished second, was the fastest of the single-cylinder machines, averaging 36.3 miles per hour, as against 36.8 m.p.h. by the 8 h.p. American twin which made fastest time in the race.

The A.B.C. Skootamota.

THE capital of Messrs. Gilbert Campling, Ltd., of 1, Albemarle Street, London, W., manufacturers of the A.B.C. Skootamota, after the recent issue, is now £200,000. Orders on hand are of the net value of £800,000, and by the end of October it is expected that the deliveries will total 100 per week. The enormous output of 500 per week is aimed at by the makers, and it is intended to turn out the machines on the latest principles of mass production. The engines will be made at Croydon, and the production of the frames and assembly will be carried out at Somerton, I. of W.



The lubrication system on the Alecto 3½ h.p. two-stroke, recently described. The oil is collected in a sump formed on the crankcase baffle plate, and flows through a hole drilled in a web on the side of the crankcase to the main bearing and big-end, as indicated by the arrows.

MOTOR CYCLING MART

NOTICES.

"MOTOR CYCLING" is published in London every Wednesday morning.

HEAD OFFICES—7-15, ROSEBERY AVENUE, LONDON, E.C. 1. Telephone—Holborn 5292 (four lines). Telegrams—"Motor Cycling, Phone, London."

MIDLAND OFFICES—9 & 10, Burlington Chambers, New St., BIRMINGHAM. Telephone—No. 2498 Midland. Telegrams—"Presswork, Birmingham." 6, Warwick Road, COVENTRY. Telephone No. 983 Coventry. Telegrams—"Presswork, Coventry."

NORTHERN OFFICES—196, Deansgate, MANCHESTER. Telephone No. 2467 Central. Telegrams—"Presswork, Manchester."

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All Advt. orders are subject to confirmation in writing from the Head Offices.

All Advertisements and Contracts are accepted and made upon the express condition that the Publishers have the absolute right to refuse to insert copy to which they may object for legal, public or trade reasons, and such refusal of copy shall not be a good ground for advertisers to stop a current contract or to refuse to pay for the same or for taking action for breach of contract. Advertisements received too late for insertion in the issue then closing for press will—unless accompanied by express instructions to the contrary—be inserted in the following issue. Whilst every precaution is taken to ensure accurate printing, the Publishers will not be responsible for printers' errors, nor will they be responsible for advt. blocks that are left in their possession for more than one year.

All Communications respecting "Advertisements" must be addressed to "The Manager," "MOTOR CYCLING," 7-15, Rosebery Avenue, London, E.C. 1.

Advertisers desiring to have replies sent care of "MOTOR CYCLING" may do so on payment of a nominal fee of 6d.

DEPOSIT SYSTEM.—The intending buyer forwards to our office the amount of the purchase money, which will be acknowledged to both parties. Notes or Money Order save time. Money Orders should be made payable at the Money Order office at 114 Farringdon Road, E.C., and drawn in favour of Temple Press Ltd. Cheques must be made payable to Temple Press Ltd. and are acknowledged to seller when "cleared." If a sale is concluded we forward to the seller the amount agreed upon. If no sale is made we return the amount deposited. In either case we deduct a commission of 1¼% (3d. in the £, minimum 2/6) on the amount deposited, to cover our expenses of booking, postage, etc. Carriage is to be paid by the buyer. If the article is returned, each party pays one way. The risk of damage in transit is the seller's. Articles on approval are not to be retained more than three days, unless by arrangement between the parties. All disputes to be settled by the arbitration of the Editor of "MOTOR CYCLING," whose decision shall be final and binding on both parties.

Other Business and Editorial Notices will be found on the last page of this section.

MOTOR-BICYCLES.

—**A.B.C.** Earliest deliveries; your name on our list ensures this. Martin Mitchell, Ld., Stafford. 535-983

—**A.J.S.**, 2¾hp, 2-speed, 1915, never used during war, good as new, 74 guineas. Stott, 129 Castlegate, Berwick-on-Tweed. 519-c116

—**A.J.S.**, 6hp, c.-b. sidecar, purchased new September, 1919, military model, £155. Bryant, The Laundry, Eastergate, near Chichester. 519-c154

—**A.J.S.**, 1913, with coach-built sidecar, in good condition, price £90. Exeter Motor Cycle Co., Ld., 7 Bath Rd., Exeter. 519-198

—**A.J.S.** 4hp combination, 2-speed, spare interchangeable wheel, etc., 90 guineas. 10 Woodside Rd., South Norwood, S.E. 519-c299

—**ALLDAYS-MATCHLESS**, 1914, 6hp combination, 2-speed, free engine, handle start, Bosch magneto, Senspray carburetter, lamps, perfect condition, £55 or nearest offer. 66 Derby Road, Ponders End. 519-c117

—**ALLON**, 2-speed clutch model, tip-top condition throughout, lamps, horn, tools, £50. Parker's, Bradshawgate, Bolton. 519-225

—**AMERICAN EXCELSIOR** inquiries. Lancashire, Cheshire, North Wales, Isle of Man only. J. Blake and Co., Official Dealers, Liverpool-Manchester. zzz-402

—**AMERICAN EXCELSIOR**, new and latest model, 7-9hp, 3-speed, with Montgomery de luxe sidecar, £166, just arrived, kick-starter on right-hand side. The Premier Motor Co., Aston Rd., Birmingham. 521-220

—**ARIEL**, 3½hp, with sidecar, August, 1919, model, 3-speed, heavy Dunlop tyres, spare valves, inner tube, horn, Lucas tail lamp, whole combination as new, only done 450 miles, splendid running order, £135, offers. Box No. 2765, c.o. "Motor Cycling." 519-b874

—**ARIEL**, 1917, 3½hp, 3-speed countershaft, horn, P. and H. lamps, semi-T.T. bars, fast and reliable, £80. Wednesday and Thursday after 2 p.m. 3 Priory Gdns., Chiswick. 519-c319

—**ARIEL**, 3½, 1919, new, 3-speed, kick-starter, immediate delivery, London agents, £110. Dr. Gibbons, Globe Hotel, Kings Lynn. 519-c293

—**AUTO-WHEEL**, with gent's cycle, two new Dunlops, perfect condition, £16 10s. 145 Tennyson Rd., Luton. 519-b853

—**AUTO-WHEEL**, frame (chassis) only required, 1915 or later pattern, B.S.A. preferred, sound condition. Fell, 39 Union St., Woolwich. 519-c331

—**BABY TRIUMPH**, new August, first-class condition, 2-speed, go anywhere, inspection by appointment, £60 or best offer. Selby, 22 Honor Oak Park, S.E. 22. 520-c147

—**BAT** 8hp luxurious combination, 3-speed, kick-starter, clutch, J.A.P. engine, fully equipped, condition as new throughout, trial or examination. Parker's, Bradshawgate, Bolton. 519-226

—**BAT-J.A.P.**, 8hp, coach-built sidecar, speedometer, lamps, new tyres, belt, spares, tools, complete, good condition, powerful, reliable, bargain, £85; would consider exchange for 4¼hp combination. 122 Deacon Rd., Willesden. 513-c323

—**BLACKBURNE**, 4hp single, 3-speed, clutch, kick starter; 8hp, 3-speed; 8hp twin, sidecar combination, and all Blackburne engines. Order now. London Motors, 61 Holborn Viaduct, London, E.C. zzz-73

—**BLACKBURNE**, 4hp, September, 1919, used about 100 miles, best offer. James Ross, 36 Mansfield Ave., Cambuslang. 519-c130

—**BRADBURY** 4¼ combination, 1913, 2-speed, N.S.U., £48. 17 Edgar Rd., Bow. 519-c167

—**BRADBURY**, 4hp, late 1914, Bosch, B.B., recently overhauled, first cheque £40 secures. W. H. Cook, Orpington. 520-189

—**BRADBURY**, 4hp, 2-speed, lamps, horn, etc., in excellent condition, £40, or exchange. 158b Norwood Rd., West Norwood, S.E. 519-c315

—**BRADBURY**, 4hp, 3-speed combination, £65, bargain. Ridge Cottage, Coleridge Rd., N. Finchley. 519-c312

—**BRADBURY**, 6hp, 3-speed combination, with all accessories, in good running condition, recently overhauled by makers, £100 or best offer. Warner, 22 Heath St., Hampstead, N.W. 3. 519-c321

—**BROUGH** inquiries. South Lancashire, North Cheshire and Isle of Man only. J. Blake and Co., Official Dealers, Liverpool—Manchester. zzz-401

—**BROUGH**, 1915, 3½hp, 2-speed, lamps, Klaxon, no reasonable offer refused, or Douglas taken in part exchange. Whitehead, 77 Marylebone Lane, Oxford St. 519-222

—**BROWN**, 3½, Bosch, B.B., new belt and handlebars, lamps complete, fast, reliable, takes 2 anywhere, £35 secures. Beeches Bank, Malpas. 519-c138

—**B.S.A.**, 4¼hp, 3-speed countershaft, chain drive, with 1919 Coronet coach sidecar, £92 10s. Collier's Moteries, Union St. South, Halifax. 520-c131

—**B.S.A.** 1916 combination, 3-speed countershaft, all-chain, Cameo windscreen, lamps, etc., good condition, running order, £90 or offer. 10 Thornby Rd., Clapton, N.E. 5. 519-c155

—**B.S.A.**, 1919, model H, with Cancelet sidecar, all as new, 600 miles, kick-start, 3-speed, all-chain drive, Lucas lamps, windscreen, Klaxon horn, nearest £150. Beable, 206 Ribblesdale Rd., S.W. 16. Letters only, or 'Phone, Regent 3064. 519-b53

—**B.S.A.**, 4¼, 3-speed, chain-cum-belt, speedometer, and all accessories, 1913 model, done 3,000 miles, splendid order, £90; can be seen 12-2 and 5-7 p.m. Wednesday and Thursday, 22nd and 23rd October, Abbotsford Hotel, Upper Montague St., Russell Sq. Apply, Walker. Returning Australia. 513-190

—**B.S.A.** 1919 combination, lamps, speedometer, horn, £110. 7 Aston St., Iffley Rd., Oxford. 519-c385

—**B.S.A.**, 1917, all-chain handsome coach-built sidecar, speedometer, mechanical horn, £93, privately owned. 59 Bexley Rd., Erith, Kent. 519-c333

—**B.S.A.**, 4¼hp, latest pattern, and beautifully upholstered, roomy coach-built sidecar, 3 speeds, countershaft, chain-cum-belt, kick-starter, 3 lamps, horn, spare belt and tools, complete, best offer over £125; on view by appointment. 21 Brereton Rd., Bedford. 515-c222

—**B.S.A.**, 1914, c.-b. sidecar, clutch, Bowden, 3-speed countershaft, chain-cum-belt, speedometer, lamps, tools, bargain, £78. Manning, 85 South End Rd., Hampstead. 519-b733

—**B.S.A.** Prospects of early delivery; secure your order now. Parker's, Bradshawgate, Bolton. 519-229

—**CALTHORPE**, 1915, 2-stroke, 2-speed, new Cowey, horn, lamps, spare tube and case, new condition, £46. Haynes, The Cedars, Stanstead, Essex. 519-c156

—**CALTHORPE**, 2¾hp Precision, free engine, 2-speed, accessories, lamps and generator, just overhauled, £32 or near offer. 18 Coram Buildings, Russell Sq., W.C. 519-c313

—**CALTHORPE-J.A.P.**, 2¾hp, new condition, powerful engine, bargain, £39. Feaston, 1 Station Rd., Epsom. 519-b855

—**CALTHORPE-J.A.P.**, May, 1919, 2¾hp, 2-speed free engine, £55. 176 Walmer Rd., North Kensington. 519-c338

—**CAMPION-J.A.P.** 1917 6-8hp combination, as new, £115. H. Wright, Arlesey, Beds. 519-b869

—**CHATER LEA** inquiries. South Lancashire only. J. Blake and Co., Official Dealers, Liverpool—Manchester. zzz-404

—**CHATER LEA** 2-stroke lightweights, finest 1920 solo, 2 speeds, quick-detachable wheel, footboards, in stock, £60. Endrick Engineering Co., High St., Crawley, Sussex. 511-192

—**CLYNO**, 1914, 6hp, coach-built sidecar, hood, screen, carrier, lamps, 2 spare wheels, good running order, £100. Box No. 2620, c.o. "Motor Cycling." 519-b448

—**CLYNO** combinations and lightweights. Write, 'phone or call for particulars of deliveries. Kars, 5 Bond St., and 115-122 Pitshanger Lane, Ealing. 'Phone, 553 Ealing. 521-172

—**CLYNO**, 5-6, twin, 1914, and coach-built sidecar, windscreen, cyclometer, lamps, and all accessories, new tyres, in splendid running order and condition, £110. Appointments by 'phone (mornings), Sutton 1046. 519-c129

—**CLYNO**, 6hp, coach-built combination, windscreen and apron, 2-speed clutch and kick-start, all on, in perfect working order, £66 10s. Scott, 173 Thorold Rd., Ilford. 519-b877

EASTERN GARAGE

—**CONNAUGHT**, 2¾hp, late 1915, stored during war, new tyres and belt, footboards, all accessories, every detail perfect, single-speed, owner bought car. Also Lea-Francis twin combination. 5 Spring St., Paddington, W. 2. 519-c307

—**CONNAUGHT**, 3hp, 2-stroke, new August, 1919, not scratched, spare plug, etc., £48. Taylor, 7 St. Mary's St., Stamford. 519-c292

—**COULSON-B.** Inquiries. South Lancashire, North Cheshire and Isle of Man only. J. Blake and Co., Official Dealers, Liverpool—Manchester. zzz-405

—**COULSON-B.**, 2¾, solo mount, Blackburne engine 2-speed, spring frame. Order now. Sole London and district agents, London Motors, 81 Holborn Viaduct, London, E.C. zzz-74

—**DALM**, 3hp, 2-speed, free engine, complete with lamps, generator, mechanical horn, pillion seat and spares, smart machine, £48. 9 Wendell Rd., Shepherd's Bush. 519-c281

—**DE LUXE** motors, single speed, £41; 2-speed, £48 10s.; 3 speeds, hand clutch, kick-start, £52; accessories, overhauls. Wastell, High St., Orpington. 519-c127

—**DIAMOND**, the ideal lightweight, the machine that wins through in all competitions; good deliveries from the sole Leicestershire agent. Will Chapman, Belgrave Rd., Leicester. 533-a589

—**DOUGLAS.** It appears ridiculous to advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery. Eli Clark, Douglas Agent, 196 Cheltenham Rd., Bristol. zzz-159

—**DOUGLAS.** Place your order with the Douglas Expert. Satisfaction is my motto. Gibb, Gloucester. 'Phone 832. 969-817

—**DOUGLAS**, 1919, 4hp combination, with latest clutch, delivered October 4th, done 200, 3 lamps, horn, spare valve complete, spare plug, and windscreen, £150, seen any time. Lloyd, Staplegrove, Taunton. 519-c125

—**DOUGLAS**, 1919, 4hp combination, just delivered, set of lamps, horn, storm apron, tools, etc., £165. Edwards, Catstree House, Worfield, Bridgnorth. 519-c123

—**DOUGLAS**, 1919, 4hp combination, as new, lamps, horn, windscreen, storm apron, etc., £150 or near. Cooke, 23 Gray's Inn Rd., W.C. 519-c135

—**DOUGLAS**, 2¾, War model, bought new June, tyres as new, Lucas lamps and generator, run short distance, splendid puller. H.R.W., 5 Barston Rd., West Norwood. 519-c153

—**DOUGLAS**, 1919, 4hp combination, coach-varnished sidecar, hood, windscreen, apron, 3 electric lamps, Klaxon, speedometer, and improvements, spare cover and tube, condition as new, £150 or near offer, any trial by appointment. Rev. F. E. England, 24 Sylvan Rd., Wanstead, Essex. 519-c156

—**DOUGLAS**, 2¾ twin, excellent running order, will accept £38, bargain, owner buying combination. Murray, Bayview, Brora. 519-c160

—**DOUGLAS**, new, 2¾hp, W.D. model, covered 300 miles only, tools, etc., cost £83, will sell £75, owner buying Indian sidecar. Apply, after 6 o'clock, Rawlings, 12 St. James's St., Piccadilly. 519-c137

—**DOUGLAS**, bargain, 2¾, 2-speed, and clutch, 1915 engine, 1912 frame, perfect condition, just overhauled, 42 guineas. 71a Niton St., Fulham Palace Rd. 519-c142

—**DOUGLAS** 4hp 1919 combination, complete with storm apron; extended payments if desired. Harrods Motor Showrooms, 116-118 Brompton Rd., opposite Main Building, London, S.W. 1. 519-200

—**DOUGLAS** 1919 4hp combination, £135 or near offer. Box No. 2764, c.o. "Motor Cycling." 520-3672

—**DOUGLASES**, 2¾hp, brand new, with either T.T. or touring handlebars, £72, plus carriage, footboards 17s. 6d. extra; very prompt deliveries, 1 or 2 from stock. Robinson's Garage, 32-35 Green St., Cambridge. Telephone 995 (2 lines). Telegrams, "Bicycles." 519-184

—**DOUGLAS**, 4hp, 1919 type combinations, with improved type of clutch, very prompt deliveries, 1 or 2 from stock at £133, plus cost of crate and carriage. Pamphlets with specification. Robinson's Garage, 32-35 Green St., Cambridge. Telephone 995 (2 lines). Telegrams, "Bicycles." 515-185

—**DOUGLAS** 4hp sidecars, with storm apron, door, 4 attachments, very low and sporty, brand new, in stock, £28, crate and carriage extra. Robinson's Garage, 32-35 Green St., Cambridge. Telephone, 995. Telegrams, "Bicycles." 519-186

—**DOUGLAS**, 4hp, 1917, 3-speed, clutch, Douglas sidecar, accessories, perfect condition, £95. 5 Victoria Ave., Surbiton. 519-b858

New Motorcycles and Sidecars from Stock.

An excellent selection now available at manufacturers' minimum list prices.

Exchanges Arranged.

Second-hand Machines.

All the following have been overhauled and can be relied upon for good service:

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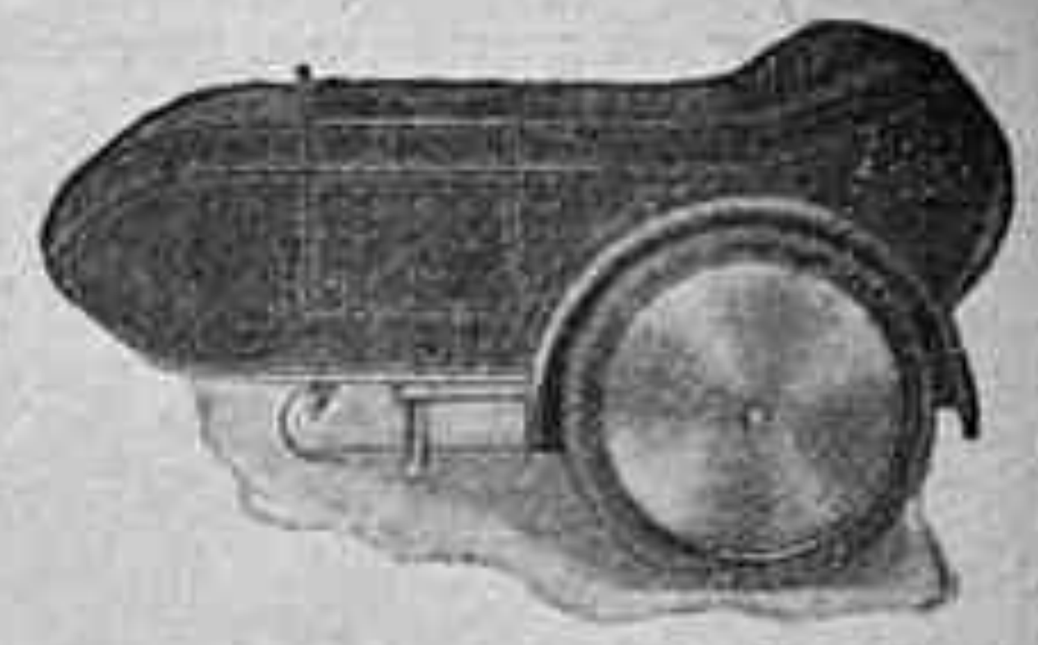
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—**GAUNTLETS.** Brown leather, lined, 7s. 11d. The greatest bargain ever offered; order immediately.

—**MOTORCYCLES.** Orders taken for all makes. Early deliveries. We stock everything for the motorist.

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—**GORDON'S** air-cooling sparking plug terminals (Rd. No. 656553) increase the life of all spark plugs, zero practice for motorcycle engines, price 1s. 2d. each post free; please state make of plug required for. Gordon and Cox, Braintree Motor Works, Braintree, Essex. zzz-590

—**J.A.P.** 6 and 8hp., Triumph, Sunbeam, Bradbury, and Douglas pattern pistons, also water-cooled light car pattern pistons. We are manufacturing these pattern pistons, and can give delivery within 48 hours, either standard or oversize. If oversizes are required, send cylinder, with name and address, plainly written, attached; any special type made. W. T. Matthews, Motor Engineer, 114 Suffolk St., Birmingham. Telegrams, "Walmatt." Telephone, Midland 1858. 505-967

—**50 NUTS,** bolts, washers, assorted, 2s. 6d., post free; send for list. Eric Meadows, Haukfield Lane, Southport. 537-677

—**DOUGLAS** magneto timing wheels, 4hp., 12s. 6d.; 2¾hp., 10s.; by return post; tank caps, with glass, 3s.; Thomson-Bennett magneto for 2¾ Douglas, with timing wheel, £3 5s.; C.A.V. ditto, £5 10s.; M.L. magneto for Triumph, with sprocket, £6 10s.; Reynolds' chains, new, ½ in. by 5/16 in., 93 links, fit Enfield, 18s. 6d.; N.S.U. 2-speed gear, fit N.S.U., £4 15s. 21 Mapledene Rd., Dalston, E. 8. 515-c297

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26 x 2½ passenger heavy rubber studded	49/6	55/-
26 x 2¼ Tourist Trophy, rubber studded	39/-	44/6
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26x2½x2¼ Tourist Trophy	43/6	50/-
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PALMER—		
28 x 3 heavy 4-ply fabric	65/-	79/9
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1916 **Harley**, 7-9 h.p., 3-speed, countershaft, c/s, all-chain drive, special sidecar, windscreen, acetylene lamps, newly enamelled Harley colours, and overhauled, nearly new tyres all round **150**
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1914 **Douglas**, 2-speed, good order ... Several from **53**
1912 **Sun**, 3½ h.p., 2-stroke, 2-speed, countershaft, in good condition, tyres good **40**
1916 **Triumph**, 4 h.p., 3-speed, c/s, k/s **84**
1913 **Scott**, 3¾ h.p., 2-speed, wicker sidecar, in excellent condition **60**
1914 **Triumphs**—four in stock—3-speed, clutch, just completely overhauled and enamelled, excellent tyres ... each **65**
1919 **O.K. Junior**, 2¼ h.p. J.A.P., 2-speed, c/s, enamel as new, in excellent condition, nearly new tyres **62**

c/s, Countershaft. k/s, Kick starter. c.b., Coach-built.

Also Several Others.

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Having taken additional showrooms, we are in the position to accept an unlimited number of good motorcycles for sale on commission at 7½%. NO SALE, NO CHARGE. All machines advertised, garaged, cleaned, insured, and any small adjustments, such as Bowden cables, punctures, etc., repaired free of charge.

Drop us a line giving full particulars of your machine, together with price you are wanting; we shall be pleased to send representative down to collect machine if within 50 mile radius. After having necessary adjustments made, it is placed in our showrooms, where it is displayed to the best advantage; as soon as the machine is sold a cheque for the amount, less our commission of 7½%, is forwarded to you. Only machines in sound mechanical condition can be accepted unless we receive instructions to overhaul them.

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Your machine, if not earlier than 1914, taken in exchange for any in stock.

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—**N.S.U.** gear, 2-speed and free engine, perfect condition, £5; after 6 p.m. 111 Lyndhurst Rd., Wood Green. 519-c339

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—**INDIAN** wheels, front and back. Genuine Indian motorcycle wheels, 35s. each while they last. Gerrard's, 99a High St., Stoke Newington, N. 16. 520-124

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—**UNDERWOOD** No. 5 typewriter, latest two colours, tabulator and backspacer, in absolutely new condition, also latest Remington No. 10, sacrifice £25 each. White, Arcade, Northampton. 519-c128

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—**DISCS.** Buy your discs and number plates from the makers. Polished aluminium discs, £1 5s. per wheel; Phylro discs, £1 per wheel; to fit any type of motorcycle or car; carriage paid, including all fittings; aluminium number plates, embossed letters, 13s. 6d. per pair. Hill and Co., Disc and Number-plate Specialists, 1 and 3 Walmersley Rd., Bury, Lancashire. 519-b854

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—**CINEMAS** and films for sale. U.C., 3 Bury Court, London. 519-b861

—**TRIUMPH** parts. The most varied stock in the British Isles of these. Please read our displayed advertisement in column 3, page supplement xiv. Forfield Motors, 11 and 12 Forfield Pl., Leamington Spa. 519-203

—**JONES'S GARAGE**, Broadway, Muswell Hill, have the largest stock of spare parts in London. Douglas 2¾ and 4hp spares, heaps of them, all list price.

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—**JONES'S GARAGE.** Ariel spares in stock.
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—**JONES'S GARAGE.** B.S.A. spares in stock.
—**JONES'S GARAGE.** Premier spares in stock.
—**JONES'S GARAGE.** Levis spares in stock.

Also P. and M. gear parts, Premier parts, F.N. 2¾hp parts, etc. 1911 Matchless rear hubs, all chain, with internal brakes, £5 each. Enfield sidecar chassis, £6; Enfield 3hp frame, new, £6.

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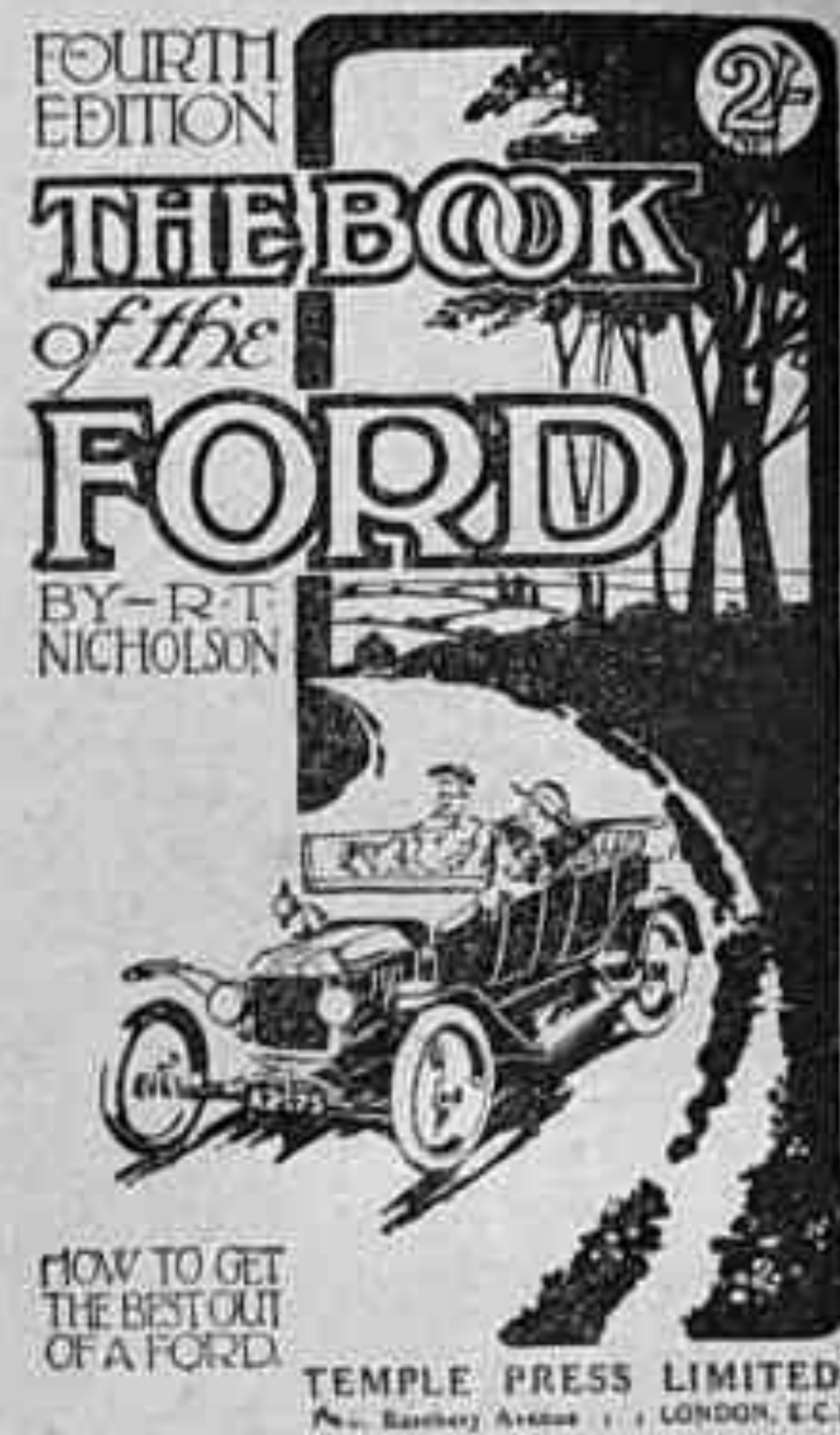
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—**JONES'S GARAGE.** The firm run by practical motorists. The Broadway, Muswell Hill, London, N. Hornsey 2562. 519-201

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—**DOUGLAS** 4hp spares. Cylinders, 45s.; pistons complete, 36s.; gudgeon pins, 2s. 6d.; connecting rods 25s. 6d.; rings, 2s. 6d.; small end bushes, 4s. 6d.; crankshaft, 61s.; flywheels, 44s.; flywheel sprockets, 8s. 6d.; valves, 6s. 6d.; springs, 8d.; collars, 9d.; cotters, 2d.; valve caps, 6s. 6d.; asbestos washers, exhaust, 7d.; valve caps, 4d.; Renold's chains, 17s. 9d.; links, 1s.; brake pads, 2s.; headclips, 11s. 6d.; extra heavy 4hp Douglas covers, 36s.; mudguard, front 24s., rear 23s.; plus postage. Robinson's. Below.

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—**RENOLD'S** chains, A.J.S., Sunbeam, 96-101 links ⅝ by ¼, 21s. 7d.; ditto 56 links, 12s. 6d.; B.S.A. 88 links, ⅝ by ¼, 20s. 7d.; plus postage. Robinson's. Below.

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—**ACCUMULATORS**, 4 volts, 40 amps., size 4 by 3½ by 5½, best quality, ready for charging, 30s., plus 1s. postage. Robinson's. Below.

—**PISTONS**, J.A.P., 6hp and 8hp, 30s.; J.A.P., 2¾hp, 30s.; Premier, 3½hp, 25s.; Triumph, 3½hp, 33s.; Douglas, 2¾hp, 17s. 6d.; Douglas, 3½hp, 25s.; Douglas, 4hp, 26s.; all complete with gudgeon pins and rings, packing and postage 1s. Robinson's. Below.

—**SPEEDOMETERS**, Cowey, £4 15s.; Watford, £4; Watford trip, £5; Stewart, £4 4s.; in stock for immediate delivery, brand new; packing and postage 1s. Robinson's. Below.

(Continued on top of next page.)

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We are now receiving good deliveries of some of the best makes of motorcycles at makers' prices.

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- 1917 **Rudge-Multi** and genuine Rudge Sidecar... ... ... £105
- 1916 **New Hudson**, $2\frac{1}{2}$ h.p., 2-speed ... ... 50 gns.
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- 1919 **Juno**, 2-speed, ridden 100 miles ... £52 10s.
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- 1916 **James**, $4\frac{1}{4}$ h.p., 3-speed and James' sidecar, Lucas dynamo lighting ... £120
- 1914 **Excelsior**, 3-speed and sidecar £85
- 1914 **Douglas**, 2-speed, kick-starter... ... 52 10s.

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'Phone—169 Walthamstow. 'Grams—"Cyclotome, 'Phone, London." 20 minutes from Liverpool St., G.E.R.

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